WOODSTOCK INTERNATIONAL

SHOP FOX®

MODEL M1112 12" X 36" GUNSMITHING LATHE

OWNER'S MANUAL

(FOR MODELS MANUFACTURED SINCE 4/08)

Phone: (360) 734-3482 • Online Technical Support: tech-support@shopfox.biz

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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT THE WRITTEN APPROVAL OF WOODSTOCK INTERNATIONAL, INC.

#10091CR

Printed in China

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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USE THE QUICK GUIDE PAGE LABELS TO SEARCH OUT INFORMATION FAST!

INTRODUCTION

Woodstock Technical Support

Your new **SHOP FOX®** Model M1112 Lathe has been specially designed to provide many years of trouble-free service. Close attention to detail, ruggedly built parts and a rigid quality control program assure safe and reliable operation.

Woodstock International, Inc. is committed to customer satisfaction. Our intent with this manual is to include the basic information for safety, set up, operation, maintenance, and service of this product.

We stand behind our machines! In the event that questions arise about your machine, please contact Woodstock International Technical Support at (360) 734-3482 or send e-mail to: **tech-support@shopfox.biz**. Our knowledgeable staff will help you troubleshoot problems and process warranty claims.

If you need the latest edition of this manual, you can download it from **http://www.shopfox.biz**.
If you have comments about this manual, please contact us at:

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MACHINE SPECIFICATIONS

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MODEL M1112
SHOP FOX® GUNSMITH LATHE WITH STAND

Product Dimensions

Weight..... 1213 lbs.
Width (side-to-side) x Depth (front-to-back) x Height..... 61 x 26 x 54-1/2 in.
Footprint (Length x Width)..... 57-1/2 x 14-1/2 in.

Shipping Dimensions

Carton #1

Type..... Wood Crate
Content..... Machine
Weight..... 1066 lbs.
Length x Width x Height..... 66 x 30 x 29 in.

Carton #2

Type..... Cardboard
Content..... Left Stand
Weight..... 164 lbs.
Length x Width x Height..... 30 x 14 x 15 in.

Carton #3

Type..... Cardboard
Content..... Right Stand
Weight..... 144 lbs.
Length x Width x Height..... 31 x 12 x 15 in.

Electrical

Power Requirement..... 220V, Single-Phase, 60 Hz
Minimum Circuit Size..... 15A
Switch..... On/Off Reverse
Switch Voltage..... 220V
Plug Included..... No
Recommended Plug/Outlet Type..... NEMA 6-15

Motors

Main

Type..... TEFC Capacitor Start Induction
Horsepower..... 2 HP
Voltage..... 220V
Phase..... Single-Phase
Amps..... 12A
Speed..... 1725 RPM
Cycle..... 60 Hz
Number of Speeds..... 1
Power Transfer ..... Twin V-Belt to Gear
Bearings..... Shielded and Lubricated for Life

Main Specifications

Operation Info

Swing Over Bed	12 in.
Distance Between Centers	36 in.
Swing Over Cross Slide	7 in.
Swing Over Saddle	11-11/32 in.
Swing Over Gap	17 in.
Maximum Tool Bit Size	5/8 in.
Compound Travel	3-1/4 in.
Carriage Travel	24 in.
Cross Slide Travel	6-1/4 in.

Headstock Info

Spindle Bore	1-5/8 in.
Spindle Taper	MT#5
Number of Spindle Speeds	9
Spindle Speeds	70, 200, 220, 270, 360, 600, 800, 1000, 1400 RPM
Spindle Type	D1-5 Cam Lock
Spindle Bearings	High Precision Tapered Roller

Tailstock Info

Tailstock Quill Travel	4 in.
Tailstock Taper	MT#3
Tailstock Barrel Diameter	1-9/16 in.

Threading Info

Number of Longitudinal Feeds	40
Range of Longitudinal Feeds	0.0011 - 0.031 in.
Number of Cross Feeds	40
Range of Cross Feeds	0.0004 - 0.0105 in./rev.
Number of Inch Threads	40
Range of Inch Threads	4 - 112 TPI
Number of Metric Threads	29
Range of Metric Threads	0.2 - 4.5 mm

Dimensions

Bed Width	7-1/4 in.
Leadscrew Diameter	0.870 in.
Leadscrew TPI	8
Leadscrew Length	44 in.
Steady Rest Capacity	3/16 - 2 in.
Follow Rest Capacity	1/4 - 1 in.
Faceplate Size	10 in.
Feed Rod Diameter	0.780 in.
Floor to Center Height	46-1/4 in.
Height With Leveling Jacks	48-1/4 in.

Construction

Headstock	Cast Iron
Headstock Gears	Flame Hardened Steel
Bed	Induction Hardened and Ground Cast Iron
Body	Cast Iron
Stand	Cast Iron and Steel
Paint	Powder Coated

Other

Kilowatt Output..... 1.119

Other

Country Of Origin ..... China
Warranty ..... 2 Year
Serial Number Location ..... ID Label on Headstock

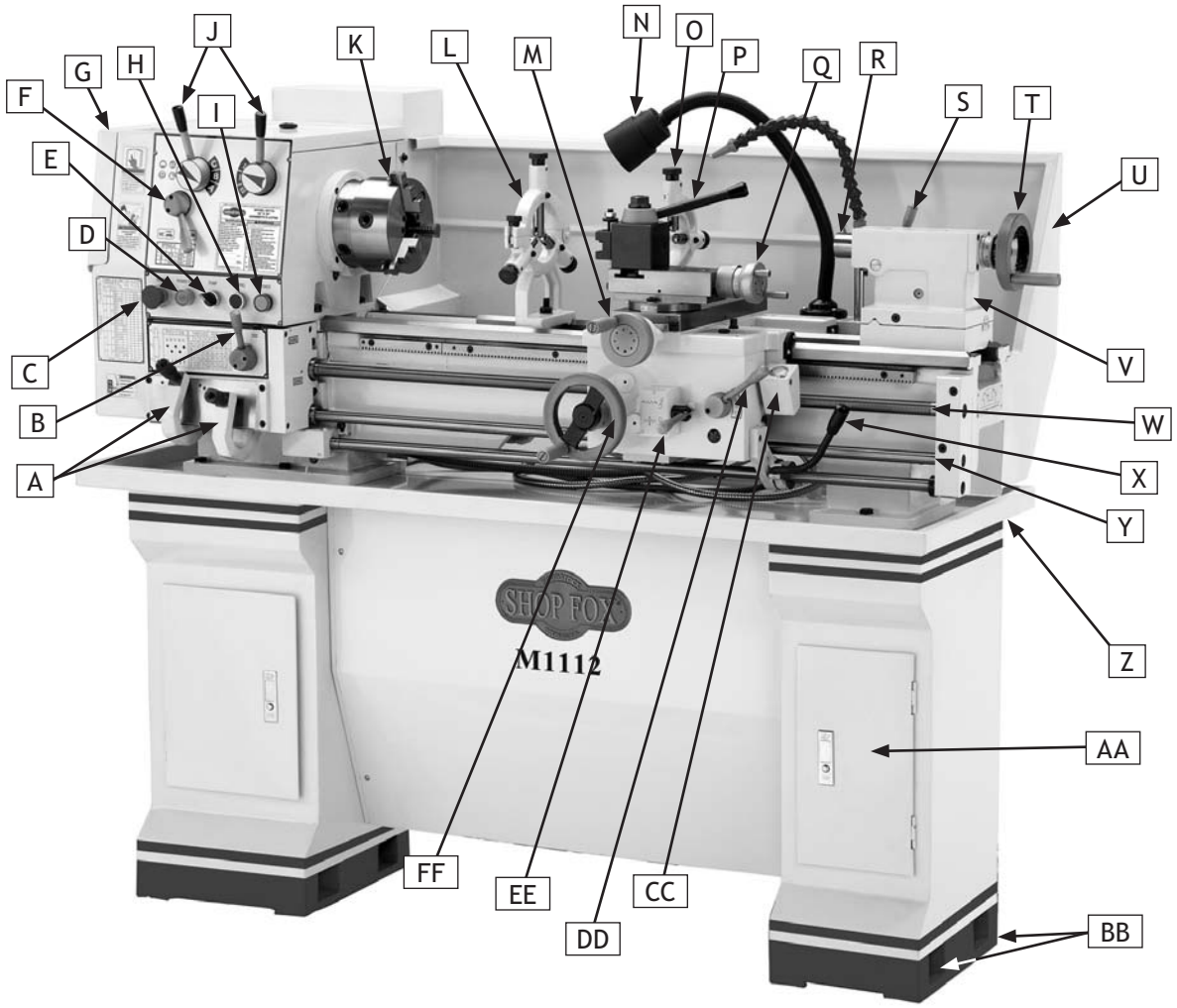
Features

Removable Gap Bed Allows Turnings up to 17" in Diameter
Easy to Use Lever Controls
Full Length Splash Guard
On/Off Reverse Switch on Carriage
Halogen Work Light
Ball Bearing Steady/Follow Rests
Outboard End Support Screws
Socket for Tailstock Lock
Cast Iron Stand with Extended Base
Cast Aluminum Gear Cover
Nine Spindle Speeds, Ranging from 70 to 1400 RPM

Accessories

1 MT#3 Live Center
1/2" Chuck with MT#3 Arbor
10" Face Plate
2 MT#3 Dead Centers (1 Carbide Tipped)
6" 3-Jaw Chuck with 2 Sets of Jaws
8" 4-Jaw Chuck with Reversible Jaws
Follow Rest with Roller Tips
Quick Change Tool Post with One Tool Holder
Set of Six Change Gears
Steady Rest with Roller Tips
Tool Box

Controls and Features



Model M1112 lathe.

A. Quick Change Gearbox Levers
B. Feed Rod Lever
C. Emergency Stop/RESET Button
D. POWER START Button
E. Pump Switch
F. Feed Direction Lever
G. Gear and Belt Cover
H. Inching/Jog Button
I. Power Light
J. Spindle Speed Levers
K. 3-Jaw Chuck
L. Steady Rest
M. Cross Feed Handwheel
N. Halogen Work Light
O. Follow Rest
P. Tool Rest
Q. Compound Rest Handwheel
R. Tailstock Spindle and Center
S. Tailstock Spindle Lock Lever
T. Tailstock Spindle Handwheel
U. Back Splash Guard
V. Tailstock
W. Leadscrew
X. Spindle Rotation ON/OFF Lever
Y. Feed Rod
Z. Chip Tray
AA. Storage Cabinet
BB. Stand Mounting Points
CC. Thread Dial
DD. Half-nut Lever
EE. Apron/Cross Feed Lever
FF. Carriage Handwheel

SAFETY

READ MANUAL BEFORE OPERATING MACHINE. FAILURE TO FOLLOW INSTRUCTIONS BELOW WILL RESULT IN PERSONAL INJURY.

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.

NOTICE This symbol is used to alert the user to useful information about proper operation of the equipment, and/or a situation that may cause damage to the machinery.

Standard Safety Instructions

1. **Thoroughly read the Instruction Manual before operating your machine.** Learn the applications, limitations and potential hazards of this machine. Keep the manual in a safe and convenient place for future reference.

2. **Keep work area clean and well lighted.** Clutter and inadequate lighting invite potential hazards.

3. **Ground all tools.** If a machine is equipped with a three-prong plug, it must be plugged into a three-hole grounded electrical receptacle or grounded extension cord. If using an adapter to aid in accommodating a two-hole receptacle, ground using a screw to a known ground.

4. **Wear eye protection at all times.** Use safety goggles with side shields or safety goggles that meet the appropriate standards of the American National Standards Institute (ANSI).

5. **Avoid dangerous environments.** Do not operate this machine in wet or open flame environments. Airborne dust particles could cause an explosion and severe fire hazard.

6. **Ensure all guards are securely in place** and in working condition.

7. **Make sure switch is in the *OFF* position** before connecting power to machine.

8. **Keep work area clean,** free of clutter, grease, etc.

9. **Keep children and visitors away.** Visitors must be kept at a safe distance while operating unit.

10. **Childproof your workshop** with padlocks, master switches or by removing starter keys.

11. **Stop and disconnect the machine when cleaning, adjusting or servicing.**

12. **Do not force tool.** The machine will do a safer and better job at the rate for which it was designed.

13. **Use correct tool.** Do not force machine or attachment to do a job for which it was not designed.

14. **Wear proper apparel.** Do not wear loose clothing, neck ties, gloves, jewelry, and secure long hair away from moving parts.

15. **Remove chuck keys, rags, and tools.** Before turning the machine on, make it a habit to check that all chuck keys and wrenches have been removed.

16. **Keep proper footing and balance** at all times.

17. **Lock the mobile base from moving before feeding the workpiece into the machine**.

18. **Do not leave machine unattended.** Wait until it comes to a complete stop before leaving the area.

19. **Perform machine maintenance and care.** Follow lubrication and accessory attachment instructions in the manual.

20. **Keep machine away from open flame.** Operating machines near pilot lights or open flames creates a high risk if dust is dispersed in the area. Dust particles and an ignition source may cause an explosion. Do not operate the machine in high-risk areas, including but not limited to, those mentioned above.

21. **If at any time you are experiencing** difficulties performing the intended operation, stop using the machine! Then contact our technical support or ask a qualified expert how the operation should be performed.

22. **Be aware that certain materials may cause an allergic reaction in people and animals**, especially when exposed to fine dust. Make sure you know what type of material dust you will be exposed to and the possibility of an allergic reaction.

23. **Habits—good and bad—are hard to break.** Develop good habits in your shop and safety will become second-nature to you.

Additional Safety Instructions for Lathes

⚠WARNING

READ and understand this entire instruction manual before using this machine. Serious personal injury may occur if safety and operational information is not understood and followed. DO NOT risk your safety by not reading!

⚠CAUTION

USE this and other machinery with caution and respect. Always consider safety first, as it applies to your individual working conditions. No list of safety guidelines can be complete—every shop environment is different. Failure to follow guidelines could result in serious personal injury, damage to equipment or poor work results.

1. **AVOIDING INJURY:** Read and understand this manual before operating this machine.

2. **SAFE CLEANING:** Do not clear chips by hand. Use a brush to avoid lacerations, and never clear chips while the lathe is turning, or entanglement may occur.

3. **USING CORRECT TOOLING:** Always select the right tool bit for the job, and make sure cutting edges are sharp. Dull or incorrect bits can break and become a projectile causing severe injury.

4. **USING CHUCK KEY CORRECTLY:** Never walk away from the lathe with the key in the chuck. An accidental start can throw the chuck key with great velocity causing severe injury.

5. **SECURING A WORKPIECE:** Make sure workpiece is properly held in chuck before starting lathe. A workpiece thrown from the chuck will cause severe injury.

6. **CHUCK SAFETY:** Get assistance when installing large chucks. Large lathe chucks are very heavy and awkward to hold and may cause injury from dropping or lifting incorrectly, so protect your hands and the precision ground ways. Always use a chuck cradle or piece of plywood over the bed and ways to prevent accidental damage.

7. **WORKPIECE SUPPORT:** Support a long workpiece if it extends from the headstock so it will not wobble violently when the lathe is turned on. A workpiece that extends more than 2.5 times its diameter must be supported by a center or steady rest or it may be thrown from the lathe.

8. **AVOIDING STARTUP INJURIES:** Make sure workpiece, cutting tool, and tool post have adequate clearance before starting lathe. Check chuck clearance and saddle clearance before starting the lathe. Make sure spindle RPM is set correctly for part diameter before starting the lathe. Large parts can be ejected from the chuck if the chuck speed is set too high.

9. **AVOIDING OVERLOADS:** Always use the appropriate feed and speed rates. Otherwise you may break tooling or eject a workpiece causing severe injury.

10. **AVOIDING ENTANGLEMENT INJURIES:** Never attempt to slow or stop the lathe chuck by hand, and tie back long hair, ponytails, loose clothing, and sleeves so they do not dangle.

11. **MAINTAINING A SAFE WORKPLACE:** Never leave lathe unattended while it is running, or coworkers or passers by may be injured severely.

12. **PREVENTING LATHE CRASHES:** Disengage the automatic feed levers after completing a job.

Avoiding Potential Injuries

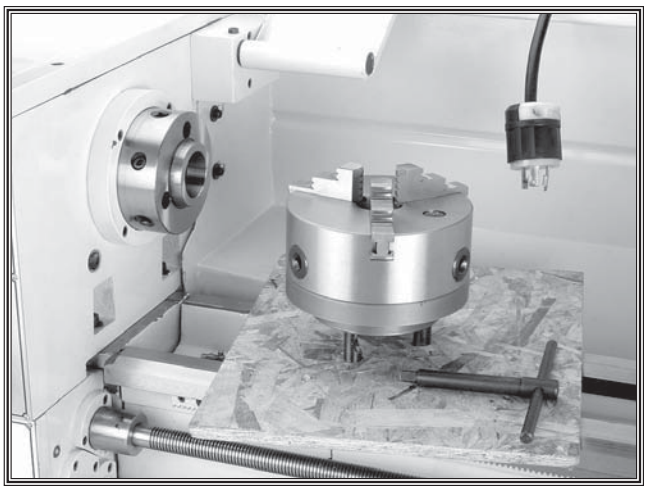


Figure 1. Always protect the bed ways, and unplug the lathe when retooling the lathe.

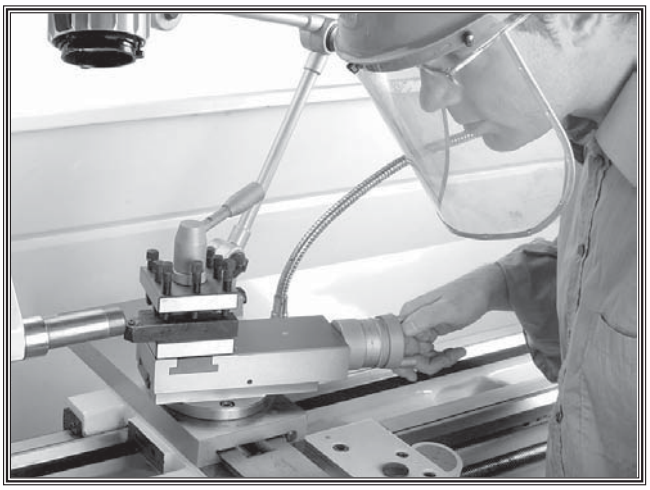


Figure 3. Always wear face and eye protection when using lathes.

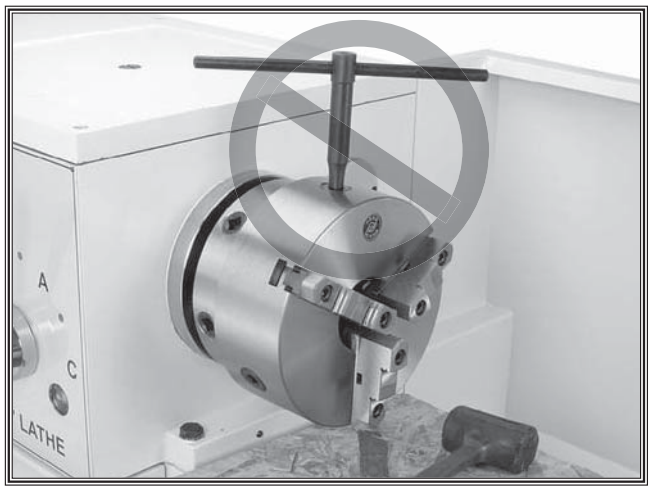


Figure 2. Never walk away from the lathe with the chuck key inserted in the chuck.

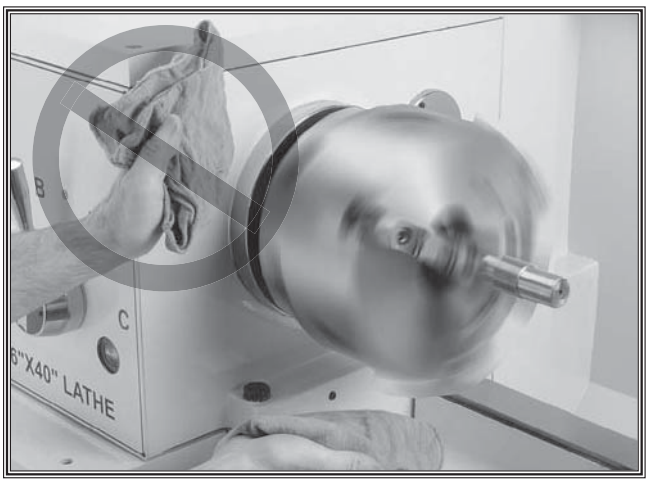


Figure 4. Never use hands to stop or slow the chuck when shutting down the lathe.

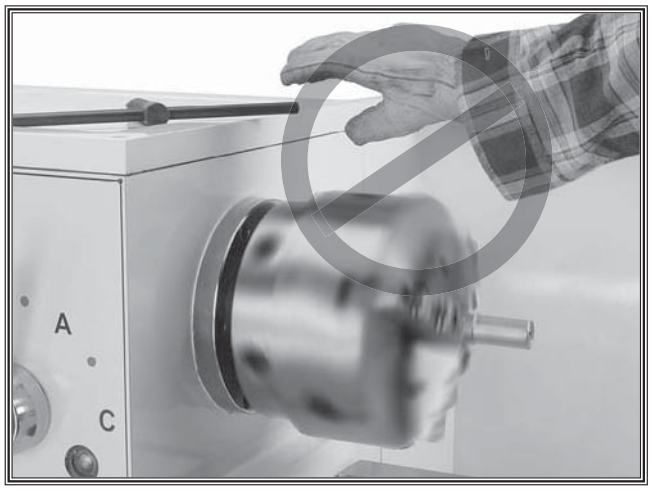


Figure 5. Never wear loose clothing or gloves when working with the lathe.

ELECTRICAL

Circuit Requirements

This machine must be connected to the correct size and type of power supply circuit, or fire or electrical damage may occur. Read through this section to determine if an adequate power supply circuit is available. If a correct circuit is not available, a qualified electrician MUST install one before you can connect the machine to power.

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating at 220V ..... 12 Amps

Circuit Requirements for 220V

This machine is prewired to operate on a 220V power supply circuit that has a verified ground and meets the following requirements:

Circuit Type .....220V/240V, 60 Hz, Single-Phase
Circuit Size ..... 15 Amps
Plug/Receptacle ..... NEMA 6-15
Cord.....“S”-Type, 3-Wire, 14 AWG, 300 VAC

⚠WARNING

The machine must be properly set up before it is safe to operate. DO NOT connect this machine to the power source until instructed to do later in this manual.

⚠WARNING

Incorrectly wiring or grounding this machine can cause electrocution, fire, or machine damage. To reduce this risk, only an electrician or qualified service personnel should do any required electrical work on this machine.

NOTICE

The circuit requirements listed in this manual apply to a dedicated circuit—where only one machine will be running at a time. If this machine will be connected to a shared circuit where multiple machines will be running at the same time, consult a qualified electrician to ensure that the circuit is properly sized for safe operation.

Grounding Requirements

This machine MUST be grounded. In the event of certain types of malfunctions or breakdowns, grounding provides a path of least resistance for electric current to travel—in order to reduce the risk of electric shock.

Improper connection of the equipment-grounding wire will increase the risk of electric shock. The wire with green insulation (with/without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

For 220V Connection

The power cord and plug specified under "Circuit Requirements for 220V" on the previous page has an equipment-grounding wire and a grounding prong. The plug must only be inserted into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances (see figure to the right).

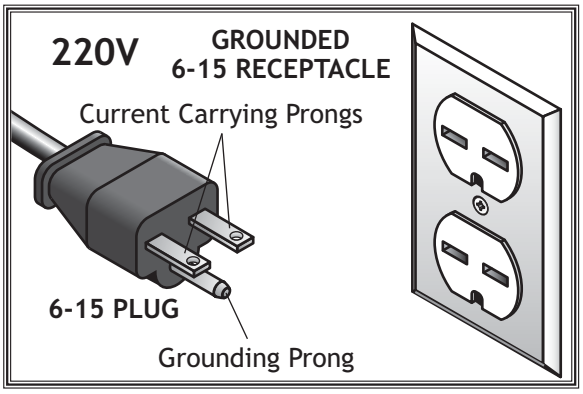


Figure 6. NEMA 6-15 plug & receptacle.

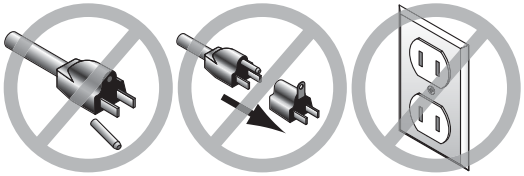
Extension Cords

We do not recommend using an extension cord with this machine. Extension cords cause voltage drop, which may damage electrical components and shorten motor life. Voltage drop increases with longer extension cords and the gauge smaller gauge sizes (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle, and meet the following requirements:

Minimum Gauge Size at 220V ..... 14 AWG
Maximum Length (Shorter is Better) ..... 50 ft.

⚠CAUTION



DO NOT modify the provided plug or use an adapter if the plug will not fit your receptacle. Instead, have a qualified electrician install the proper receptacle on a power supply circuit that meets the requirements for this machine.

SET UP

Inventory

If any parts are missing, find the part number in the back of this manual and contact Woodstock International, Inc. at (360) 734-3482 or at tech-support@shopfox.biz

Main Components (Figure 7) **Qty**

A. 6" Three-Jaw Chuck w/Jaws.....1
B. Steady Rest.....1
C. Follow Rest.....1
D. Quick Change Tool Post.....1
E. Cabinet Base:
—Cabinets (Left & Right).....2
—Front Panel.....1
—Front Panel Brackets.....2

Accessory Components (Figure 8)

F. 8" Four-Jaw Universal Chuck.....1
G. 10" Faceplate.....1
H. Oil Bottle.....1
I. Tool Box.....1
J. Three-Jaw Chuck Jaws.....3
K. Tailstock Wrench.....1
L. 3- and 4-Jaw Chuck Wrenches.....1 EA
M. Square Socket T-Wrench.....1
N. Quick Change Tool Holder.....1
O. Change Gears.....1
—Gear 27-Tooth.....1
—Gear 26-Tooth.....1
—Gear 35-Tooth.....1
—Gear 40-Tooth (Installed).....2
—Gear 45-Tooth.....1
—Gear 50-Tooth.....1
—Gear 60-Tooth.....1
—Gear 86/91-Tooth (Installed).....1
P. Hex Wrench Set 2, 4, 5, 6, 8, 10 mm.....1 EA
Q. Wrenches 9/11, 10/12, 12/14, 17/19mm.....1 EA
R. Handwheel Handles.....2
S. Dead Center Spindle Sleeve.....1
T. Arbor B16 to MT#3.....1
U. Standard Dead Center MT#3.....1
V. Carbide Tipped Dead Center MT#3.....1
W. Live Center MT#3.....1
X. #2 Phillips & Standard Screwdrivers.....1 EA
Y. Drill Chuck B16 1.5-13mm.....1
Z. Drill Chuck Key.....1
AA. Spider Screws.....4
BB. Camlock Stud Kit.....1
CC. Cabinet Base Fasteners:
—Hex Bolts M12-1.75 x 40.....6
—Flat Washers 12mm.....6
—Phillips Head Screws M6-1 x 10.....12
—Hex Nuts M6-1.....4
—Flat Washers 6mm.....12

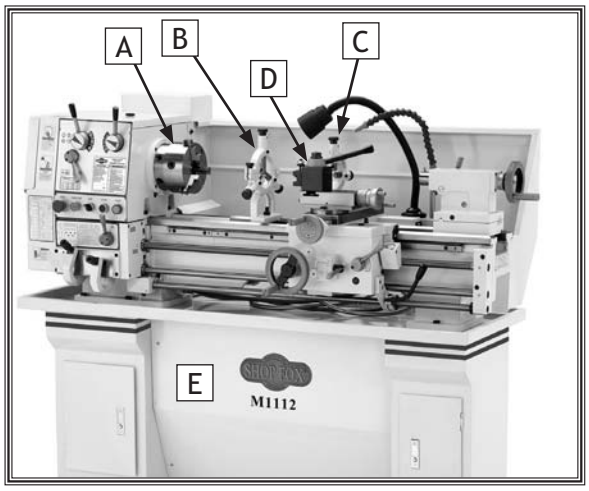


Figure 7. Main contents.

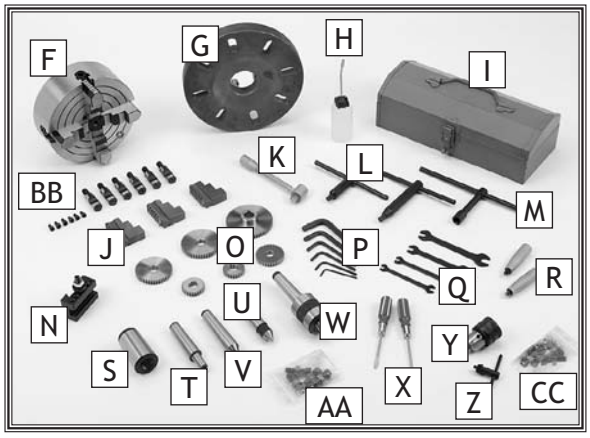


Figure 8. Packaged components.

SETUP

Uncrating and Lifting

The Model M1112 lathe has been carefully crated. If you notice the lathe has been damaged, contact your authorized **SHOP FOX®** dealer immediately.

To lift and move the lathe, do these steps:

1. Wrap two lifting straps around the bedway pedestals and route them behind the feed rod, control rod, and the lead screw, as shown in **Figure 9.**
2. Move the apron toward the right to help balance the load, as shown in **Figure 9**.
3. Position the chip pan on top of the base assembly so that the six lathe mounting holes align with top holes of the cabinets.
4. Un-bolt the lathe from the pallet.
5. Slowly raise the lathe from the pallet, and move it over the cabinet base to your prepared location.
6. Position the lathe so that the six M12-1.75 x 40 hex bolts and flat washers can be inserted through the chip pan and partially threaded, but not fully tightened, into the mounting holes of the cabinets (see **Figure 10**).
7. Shim between the lathe and cabinet base as required to make the ways level at all four corner locations as indicated with a machinist's level.
8. Fully tighten the six hex bolts to secure the lathe to the cabinet base.
9. For best results, recheck the ways in 24 hours to make sure the ways are still level and have not twisted, and re-shim as required.
10. Install the backsplash with four M6-1 x 10 Phillips head screws and flat washers.

NOTICE

If a lathe is not level, the ways can twist out of alignment, and cutting operations may be affected. Make sure that your level is a high-quality machinist's level, and that all measuring surfaces are perfectly clean. Recheck the lathe ways in a few weeks to make sure the floor has not settled. Re-shim as required.

WARNING

The Model M1112 weighs approximately 1400 lbs. You will need power lifting equipment and assistance to remove this machine from the crate and position it. Inspect all lifting equipment and make sure that all is in perfect working order and is rated for the load before attempting to lift and move this lathe. Ignoring this warning may lead to serious personal injury or death.

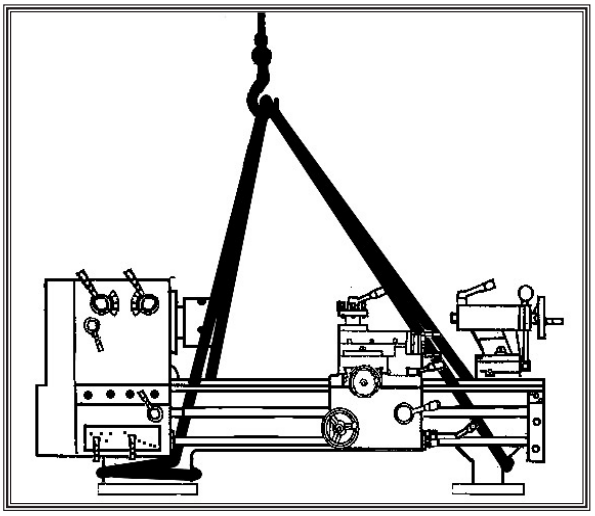


Figure 9. Lifting strap locations.

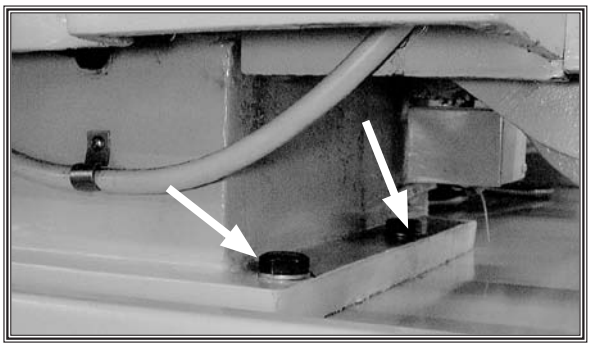


Figure 10. Lathe mounting hex bolts.

Cleaning Machine

The ways and other unpainted parts of your lathe are coated with a waxy grease that protects them from corrosion during shipment. Clean this grease off with a solvent cleaner or citrus-based degreaser. DO NOT use chlorine-based solvents such as brake parts cleaner, lacquer thinner, or acetone—if you happen to splash some onto a painted surface, you will ruin the finish.

⚠WARNING

ALWAYS work in well-ventilated areas far from possible ignition sources when using solvents to clean machinery. Many solvents are toxic when inhaled or ingested. Use care when disposing of waste rags and towels to be sure they DO NOT create fire or environmental hazards. NEVER use gasoline or petroleum-based solvents to clean your lathe.

Machine Placement

- **Floor Load:** Your lathe is a heavy load distributed in a small footprint, so you must reinforce the floor if required. The floor MUST be level, or the lathe frame and ways may twist and distort over time.
- **Working Clearances:** Consider existing and anticipated needs, service panel access, length of rods to be loaded into the lathe, and space for auxiliary stands, work tables or other machinery when establishing a location for your lathe (see **Figure 11** for dimensions).
- **Lighting:** Lighting should be bright enough to eliminate shadow and prevent eye strain.
- **Electrical:** Outlets must be located near each machine, so power cords are clear of high-traffic areas.

⚠WARNING

MAKE your shop "child safe." Ensure that your workplace is inaccessible to youngsters by closing and locking all entrances when you are away. NEVER allow untrained visitors in your shop when assembling, adjusting or operating equipment.

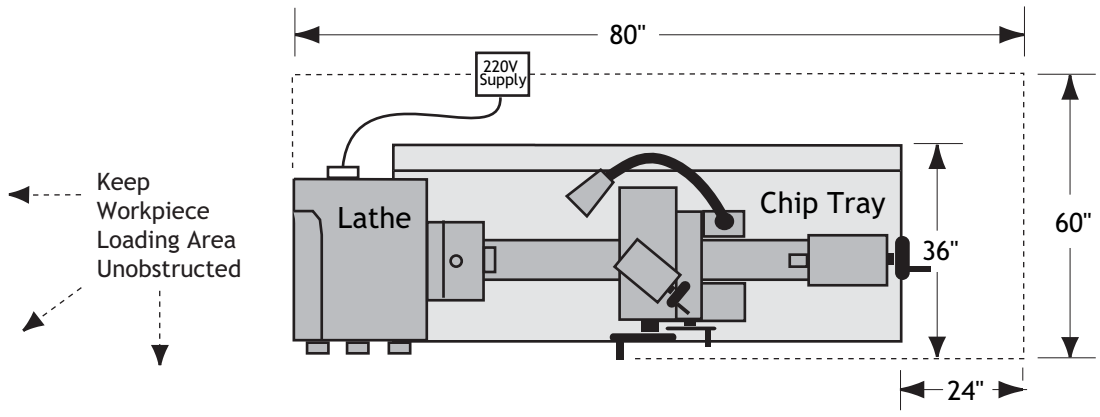


Figure 11. Minimum wall clearances.

Mounting to Shop Floor

Although not required, we recommend that you mount your new machine to the floor. Because this is an optional step and floor materials may vary, floor mounting hardware is not included. Generally, you can either bolt your machine to the floor or mount it on machine mounts. Both options are described below. Whichever option you choose it will be necessary to use a precision level to level your machine.

Bolting to Concrete Floors

Anchor studs, lag screw and anchor (**Figure 12**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the one that best fits your specific application.

NOTICE

Anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine at a later point.

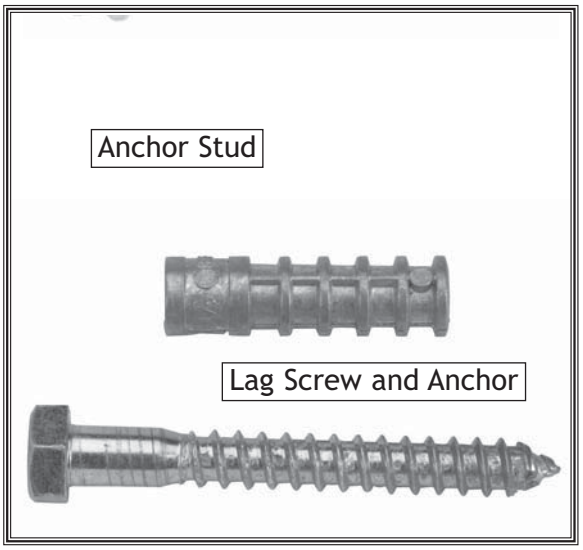


Figure 12. Typical fasteners for mounting to concrete floors.

Power Connection

Before the machine can be connected to the power source, an electrical circuit, power cord, plug, and receptacle must be prepared per the **ELECTRICAL** section in this manual, and all previous setup instructions in the manual must be complete to ensure that the machine has been assembled and installed properly.

To connect the power cord, do these steps:

1. Make sure the power cord is NOT connected to power.
2. Open the electrical cabinet and identify the **L** and **N** terminals, and the grounding plate (**PE**) at the bottom left of the cabinet (see **Figure 13**).
3. Attach insulated crimp-on wire terminals to the wires of the power cord.
4. Securely connect the incoming ground to the **PE** terminal and the two incoming hot leads to the **L** and **N** terminals.
5. Close and secure the electrical cabinet.

WARNING

Before connecting the machine to power, always make sure the reset button on the control panel is pushed in to avoid unexpected start-ups.

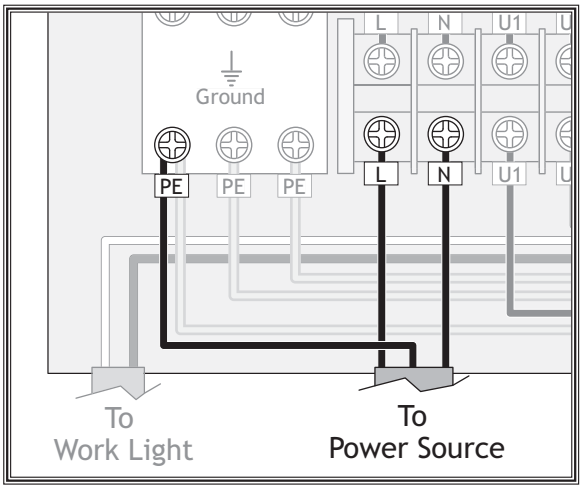


Figure 13. Locations of power cord connections inside the electrical cabinet.

Test Run & Break-In

The purpose of the test run and break-in is to make sure the lathe and safety features operate correctly, and that the lathe can enter service quickly without bearing damage if heavy work loads are immediately anticipated.

To begin the test run & break-in procedure, do these steps:

1. Make sure the lathe is lubricated and the headstock oil level is full. Refer to **Lubrication** on **Page 40**.

2. Make sure the chuck is correctly secured to the spindle. Refer to **Mounting Chuck and Faceplate** on **Page 22** for details.

3. Disengage the half-nut lever and the feed lever (**Figure 14**).

4. Connect power to the machine.

NOTICE

Make sure all power feed levers and dials are disengaged before starting the lathe! Thoroughly familiarize yourself with all the controls and their functions before using any power feed!

5. Rotate the red stop/RESET button (**Figure 15**) clockwise so it pops out.

6. Make sure the spindle rotation ON/OFF lever is in the central or neutral position (**Figure 14**).

7. Move the speed levers to **B** and **I** so the spindle will rotate at 70 RPM (**Figure 15**).

NOTICE

NEVER shift lathe gears when lathe is operating, and make sure both the half-nut lever and the feed lever are disengaged before you start the lathe! Otherwise the lathe will feed the apron into the chuck or tailstock causing severe lathe damage.

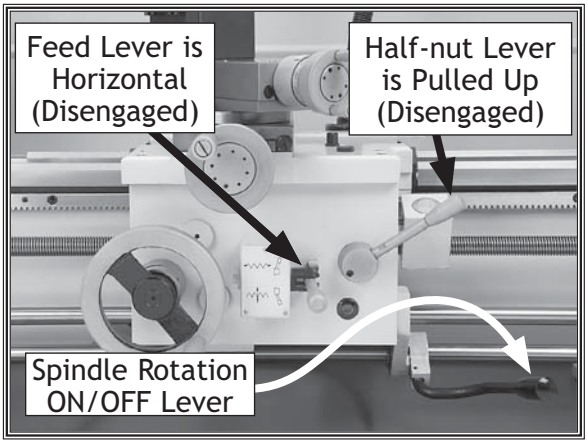


Figure 14. Apron controls.

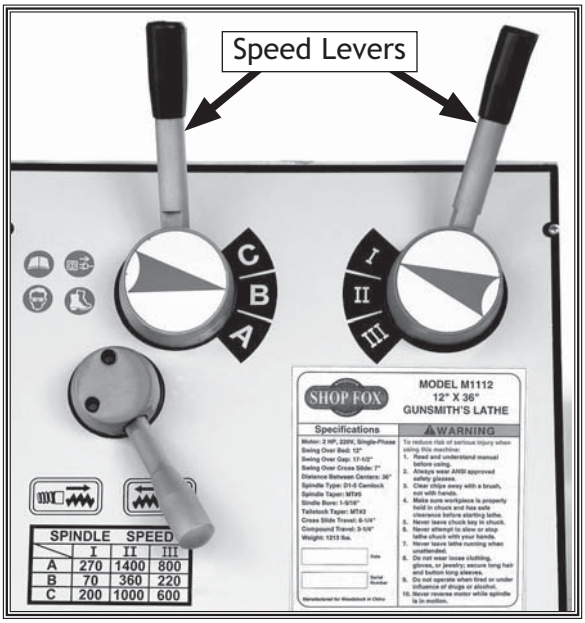


Figure 15. Headstock controls.

8. Push the POWER START button, then move the spindle rotation ON/OFF lever (**Figure 14**) down until the chuck turns. The top of the chuck should turn toward you.

— If you hear squealing or grinding noises, turn the lathe ***OFF*** immediately and correct any problem before further operation.

— If the problem is not readily apparent, refer to **Troubleshooting** on **Page 43**.

9. Push the emergency stop button.

— If the lathe does not stop, turn the lathe ***OFF*** with the spindle rotation ON/OFF lever, and disconnect the lathe from power. Refer to **Troubleshooting** on **Page 43** for correction.

10. Return the spindle rotation ON/OFF lever to STOP, reset the emergency stop button, restart the lathe, and let the lathe run for a minimum of 10 minutes in both directions.

11. Turn the lathe ***OFF***, and move the speed levers to **C** and **I** so the spindle will rotate at 200 RPM. Run the lathe in both directions for 10 minutes.

12. Repeat **Step 9** for the remaining RPM ranges, progressively increasing in RPM. When these steps are complete, the lathe is broken in.

13. Drain and refill the lubricant in the headstock with Mobil DTE Light or ISO 32 an equivalent. Refer to **Lubrication** on **Page 40** for steps and apron oil change interval.

Tailstock

The tailstock alignment was set at the factory with the headstock. However, we recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances.

To align the tailstock, do these steps:

1. Center drill a 6" long piece of bar stock on both ends. Set it aside for use in **Step 4**.

2. Make a dead center by turning a shoulder to make a shank. Flip the piece over in the chuck and turn a 60° point (**see Figure 16**). As long as it remains in the chuck, the point of your center will be accurate to the spindle axis.

   Note: *Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*

3. Place the live center in your tailstock.

4. Attach a lathe dog to the bar stock from **Step 1** and mount it between the centers (as shown in **Figure 17**).

5. Turn approximately 0.010" off the diameter.

6. Mount a dial indicator so that the plunger is on the tailstock barrel (**Figure 18**).

7. Measure the stock with a micrometer. If the stock is wider at the tailstock end, the tailstock needs to be moved toward the cutter the amount of the taper (**Figure 18**).

   — If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator by half the amount of the taper (**Figure 19**).

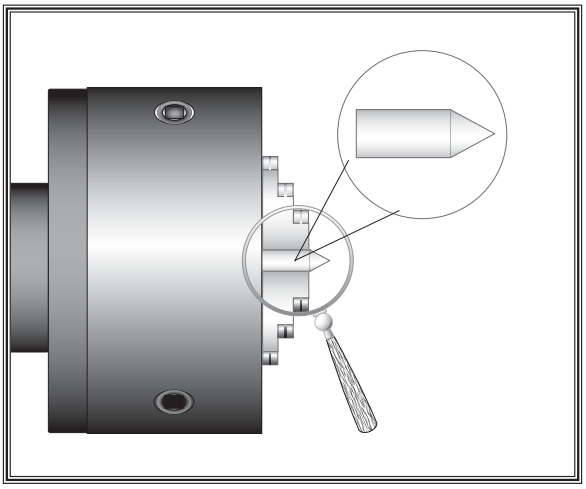


Figure 16. Finished dead center.

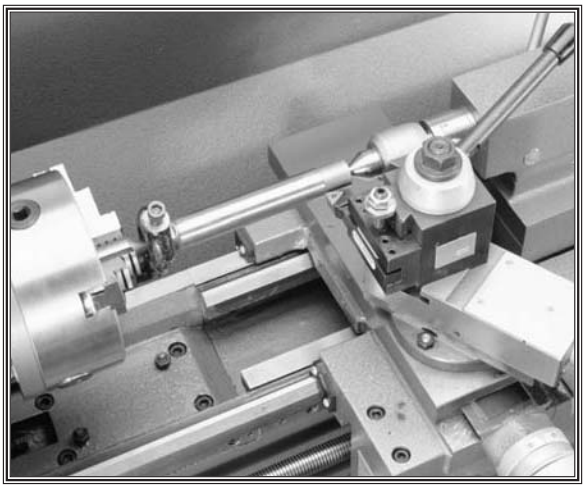


Figure 17. Bar stock mounted on centers.

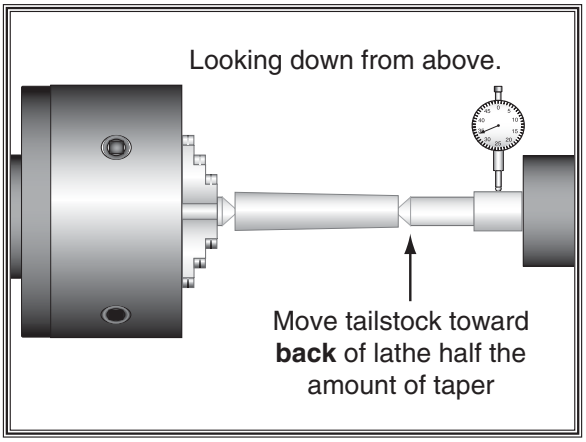


Figure 18. Adjusting for headstock end taper.

8. Loosen the tailstock lock lever and adjust the tailstock offset by half the taper by turning the adjustment set screw (**Figure 20**). Turn another 0.010" off of the stock and check for taper. Repeat as necessary until the desired amount of accuracy is achieved.

NOTICE

DO NOT forget to lock the tailstock to the ways after each adjustment.

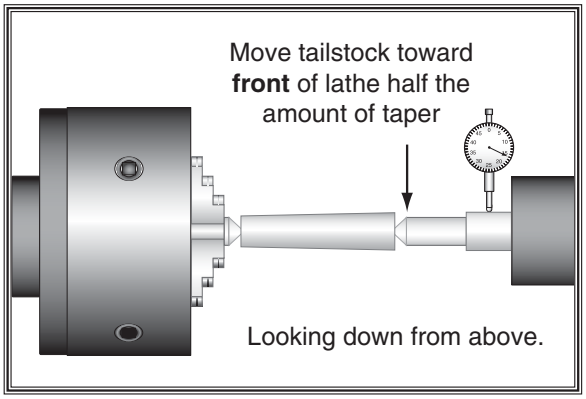


Figure 19. Adjusting for tailstock end taper.

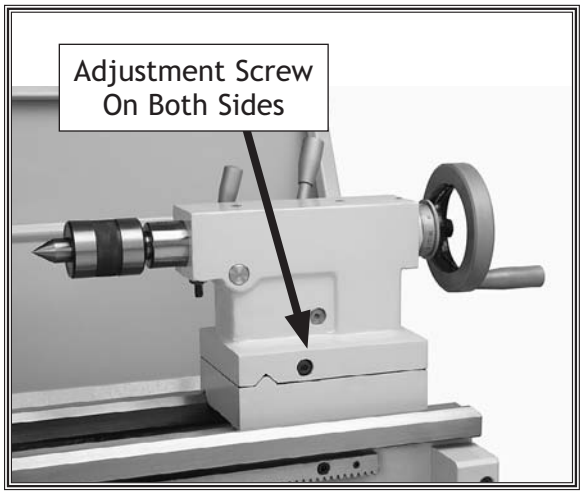


Figure 20. Tailstock left adjustment location.

OPERATIONS

General

NOTICE

Complete the Test Run and Break-In procedure on Page 17 before using this lathe for any cutting or threading operations; otherwise, gear box damage may occur.

The Model M1112 will perform many types of operations that are beyond the scope of this manual. Many of these operations can be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. **If at any time you are experiencing difficulties performing any operation, stop using the machine!**

If you are an inexperienced operator, we strongly recommend that you read books, trade articles, or seek training from an experienced lathe operator before performing any unfamiliar operations. **Above all, your safety should come first!**

WARNING

Always wear safety goggles when operating this lathe. Failure to comply may result in a serious eye injury resulting in blindness.

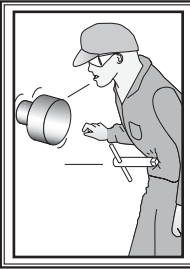
Figure 21. Spindle control levers.

Spindle Speeds

The spindle speed or RPM is controlled by the speed control levers (**Figure 21**). Use the chart in **Figure 22** to find the best spindle speed required for your task.

The chart to the right shows the various combinations of knob positions for achieving a desired speed.

Example:
To select a spindle speed of 270 RPM, move the alpha lever until the indicator arrow points to **A**. Move the numeric lever so it points to **I** (**Figure 21**).



WARNING

Securely clamp your workpiece and remove the chuck key! Thrown objects from a lathe can cause serious injury or death to the operator and to bystanders many feet away.

SPINDLE SPEED	I	II	III
A	270	1400	800
B	70	360	220
C	200	1000	600

Figure 22. Speed chart.

Mounting Chuck or Faceplate

The Model M1112 is shipped with the 3-jaw chuck installed. This is a scroll-type chuck, meaning that all three jaws move in unison when adjusted.

The 4-jaw chuck, on the other hand, features independent jaws. This chuck is used for square or unevenly-shaped stock.

If either chuck cannot hold your workpiece, the cast-iron faceplate has slots for T-bolts that hold standard or custom clamping hardware. With the correct clamping hardware, this faceplate will hold non-cylindrical parts such as castings.

The chucks and faceplate have a D-5 Camlock mount. Please note that there are lines stamped into the cam and on the chuck body (**Figure 24**). A chuck key is used to turn the locking cams.

To remove the existing chuck, do these steps:

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood across the lathe ways and position it just under the chuck. The board should be at least 8" wide and 10" long.

3. Turn a cam with the chuck key until the cam line aligns with the spindle line mark shown in **Figure 24.**

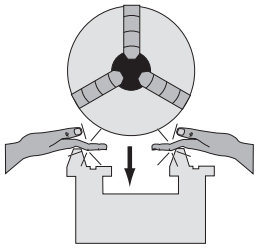
4. Turn the other cams in the same way. Make sure to support the chuck with one hand as you align the last cam. The chuck may come off at this point, so be ready to support its weight.

5. Remove the chuck key.

   — If the chuck is still tight on the spindle, tap the back of the chuck with a rubber or wood mallet while supporting the bottom of the chuck with a chuck cradle.

   — If the chuck does not immediately come off, rotate the spindle approximately 60˚ and tap again. Make sure all the marks on the cams and spindle are in proper alignment.

⚠WARNING



PINCH HAZARD! Protect your hands and precision ground bedways with plywood when removing lathe chuck! The heavy weight of a falling chuck can cause serious injury.

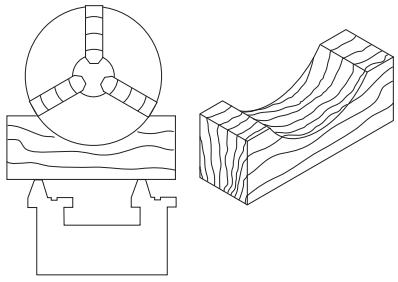


Figure 23. Simple chuck cradle made of scrap lumber.

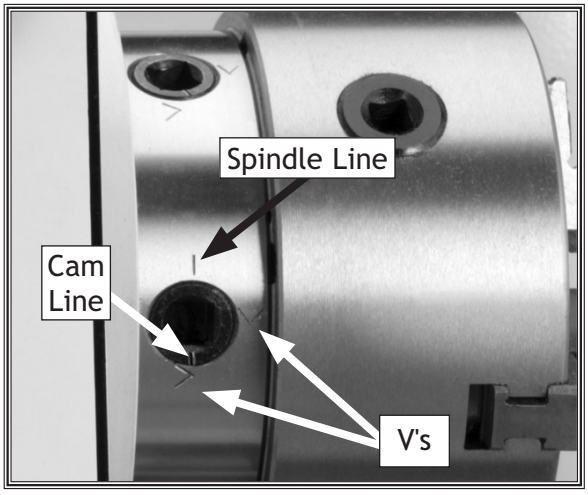


Figure 24. Cam lines aligned to spindle line.

To install a chuck, do these steps:

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood across the lathe bed, wipe clean the spindle nose taper (**Figure 25**) and the mating surface on the chuck with a rag.

3. If stamped with chuck and spindle timing marks (**Figure 26**), align the marks and the camlock studs in the back of the chuck with the holes on the spindle face, and slide the chuck onto the spindle.

4. While supporting the weight of the chuck, turn one cam with the chuck key until the cam line is between the two V's on the spindle. Do not tighten at this time.

5. Rotate the spindle and repeat **Step 4** on the opposite cam.

6. Rotate the spindle and repeat **Step 4** on the rest of the cams in an alternating manner.

7. When all cams are snug, return to the first cam and tighten the cam completely. Repeat this step with the rest of the cams.

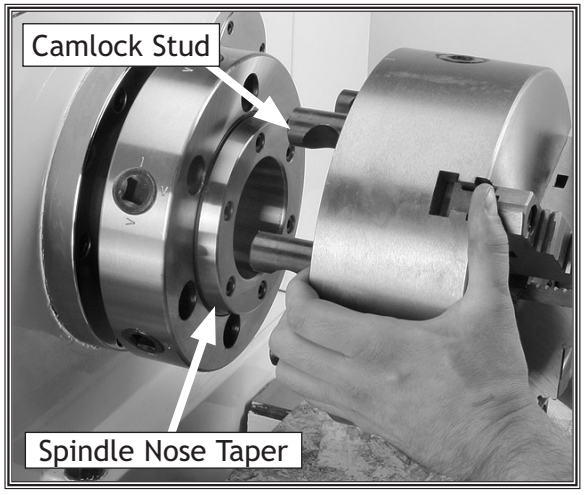


Figure 25. Installing and removing the chuck.

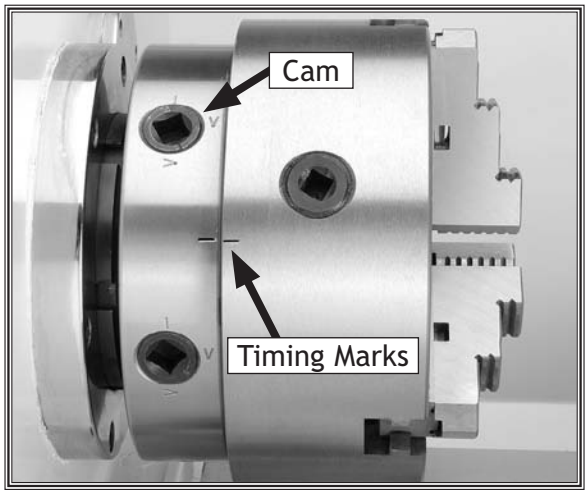


Figure 26. Tightening the camlocks when the chuck is in time with the spindle.

To load a workpiece, do these steps:

1. With the chuck key, open the jaws so the workpiece lays flat against the chuck face and jaw step or fits in the through hole. For jaw and work holding options, see **Figure 27**.

2. Slowly turn the workpiece, and turn the chuck wrench until the jaws make contact with the workpiece.

3. Turn the chuck by hand to make sure you have even contact with all three jaws and the workpiece is not off center.

   - If the workpiece is off center, loosen the jaws and adjust the workpiece.

   - If the workpiece is seated correctly, tighten the jaws.

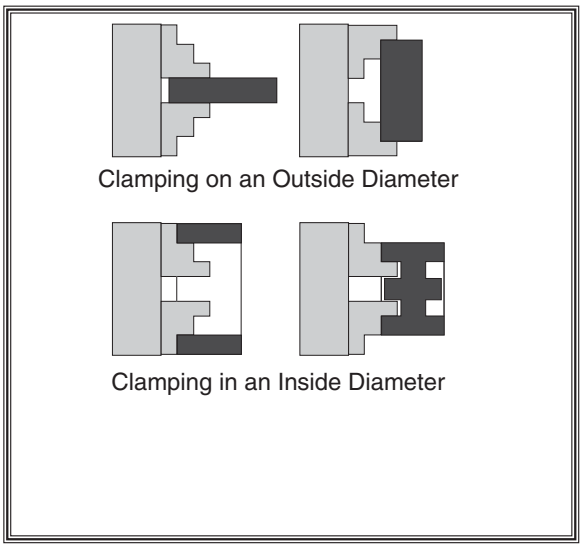
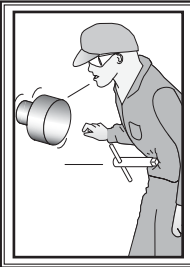


Figure 27. Loading a workpiece.



⚠WARNING

Securely clamp your workpiece and remove the chuck key! Thrown objects from a lathe can cause serious injury or death to the operator and to bystanders many feet away.

⚠WARNING

If the workpiece protrudes more than 2.5 times its own diameter, support it with a center, and possibly a steady rest. Otherwise the workpiece can deflect or come out of the chuck, causing injury.

Swapping Jaws

The three-jaw scroll chuck has removable hardened steel jaws (**Figure 28**). The outside of the jaws are used to hold the workpiece from the outer diameter.

Numbered from 1-3, the jaws must be used in the matching numbered jaw guides, see (**Figure 29**).

Note: *The chuck need not be removed from the spindle to swap the jaws.*

To swap a set of jaws, do these steps:

1. DISCONNECT LATHE FROM POWER!
2. Place a piece of wood over the ways to protect them from potential damage.
3. Turn the chuck key counterclockwise and back the jaws out.
4. Clean the jaw mating surfaces and apply a film of white lithium grease to the mating surfaces.
5. Set the old jaws aside in a safe place free of moisture and abrasives.
6. Rotate the chuck key clockwise until you see the tip of the scroll-gear lead thread just begin to enter jaw guide #1 (see **Figure 30**).
7. Insert jaw #1 into jaw guide #1 and hold the jaw against the scroll gear.
8. Rotate the chuck key clockwise one turn to engage the tip of the scroll-gear lead thread into the jaw. Pull on the jaw now and it should be locked into the jaw guide.
9. Repeat the steps on the remaining jaws.
    - If installed correctly, all three jaws will converge together at the center of the chuck.
    - If the jaws do not come together, repeat this procedure until they do.

Figure 28. Chuck and jaw selection.

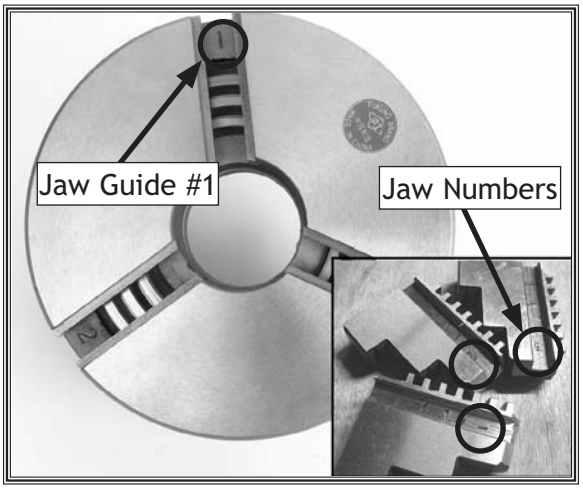


Figure 29. Jaw guide number.

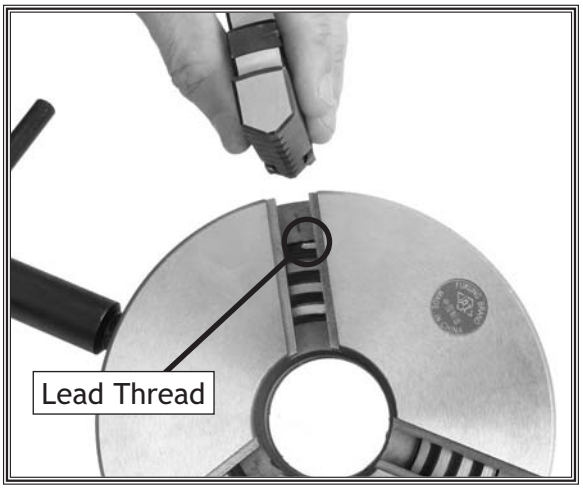


Figure 30. Lead thread on scroll gear.

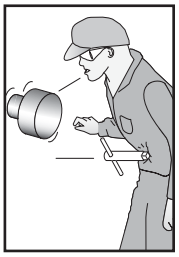
Four-Jaw Chuck

Four-jaw chucks feature hardened steel jaws that are adjusted independently. Each jaw can be removed from the chuck body and reversed. Independent jaw adjustment and reversal allows for a wide range of work holding versatility.

To install the four-jaw chuck, refer to the **Mounting Chuck or Faceplate** procedures on **Page 22**.

To load a workpiece in the four-jaw chuck, do these steps:

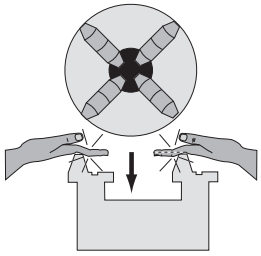
1. Using the chuck key, open each jaw so the workpiece will lay flat against the chuck face.
2. Support the workpiece.
3. Position and lock the tailstock, then turn the tailstock quill so the dead center makes contact or is close to the center point of your workpiece (see **Figure 32**).
4. Turn each jaw until it just makes contact with the workpiece.
5. In an opposing pattern, tighten each jaw in small increments. After you have adjusted the first jaw, continue tightening the opposing jaw. Check the dead center alignment frequently to make sure you have not wandered off your index point due to applying too much pressure to a single jaw.
6. After the workpiece is held in place, back the tailstock away and rotate the chuck by hand. The center point will move up and down when the chuck is rotated if the workpiece is out of center.



WARNING

Securely clamp your workpiece and remove the chuck key! Thrown objects from a lathe can cause serious injury or death to the operator and to bystanders many feet away.

WARNING



PINCH HAZARD! Protect your hands and precision ground bedways with plywood when removing lathe chuck! The heavy weight of a falling chuck can cause serious injury.

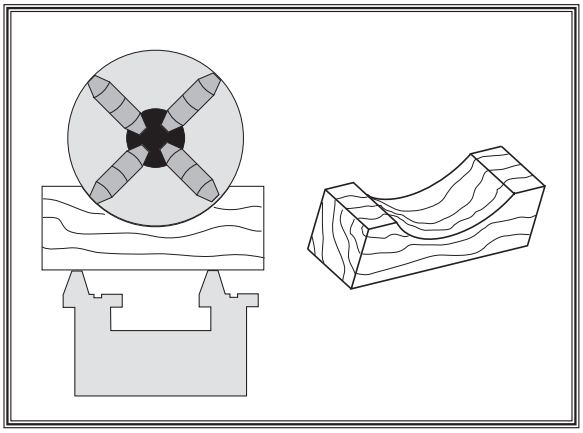


Figure 31. Simple chuck cradle made of scrap lumber.

Figure 32. Clamping workpiece.

7. Make fine adjustments by slightly loosening one jaw and tightening the opposing jaw until the workpiece is precisely aligned.

8. Use a dial indicator to fine-tune your adjustments (see **Figure 33**), and use a lower RPM when machining heavy eccentric workpieces.

⚠WARNING

PROJECTILE HAZARD! Use a lower RPM when machining heavy eccentric workpieces. Otherwise, the workpiece can be ejected by the chuck and cause serious injury.

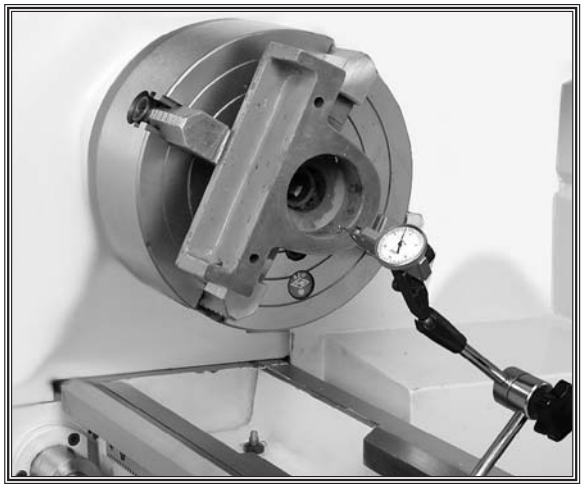


Figure 33. Centering workpiece.

Faceplate

The faceplate can be used to turn non-cylindrical parts or for off-center turning by clamping the workpiece to the faceplate.

To install the faceplate, refer to the **Mounting Chuck or Faceplate** procedures on **Page 22** to mount the faceplate.

To load a workpiece, do these steps:

1. Support the workpiece on the faceplate with a minimum of three independent clamping devices (see **Figure 34**). Failure to follow this step may lead to deadly injury to yourself or bystanders. Take into account rotation and the cutting forces applied to the workpiece when clamping to the faceplate. **Make sure your clamping application will not fail!**

Note: *Depending on the workpiece, some additional support or counter-balance may be needed.*

2. Slide the tailstock to the workpiece.

3. Lock the tailstock and then turn the tailstock quill so the dead center makes contact with the center point of your workpiece.

4. Lock the tailstock quill when sufficient pressure is applied to hold the workpiece in place.

Note: *Use a lower RPM when machining heavy eccentric workpieces.*

5. Clamp the workpiece securely and counter-balance as needed.

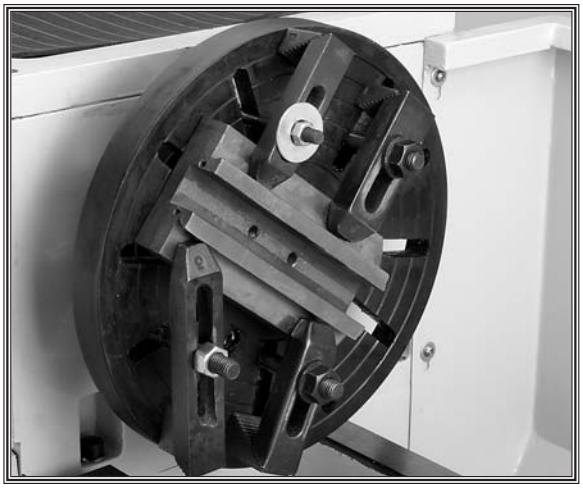


Figure 34. Faceplate with properly clamped workpiece in four locations.

⚠WARNING

Use a minimum of three independent clamping devices when turning eccentric workpieces. Failure to provide adequate clamping will cause workpiece to eject, which may cause serious injury or death.

Centers

A tailstock center supports stock that is too long to be supported by the chuck alone. The tailstock barrel and live center have an MT#3 taper. Included with this lathe is an MT#3 to MT#5 spindle sleeve. If you need to install a center in the spindle when using the faceplate, you can do so by using this adapter sleeve.

Before installing any center or arbor, make sure that the mating surfaces are perfectly clean. These parts will last longer and remain accurate if properly maintained. If oil is present on the mating surfaces, the tapers will not interlock.

To install the center, insert the end of the center into the tailstock bore until it seats. Once the workpiece is installed, the force of a mounted workpiece will fully seat the taper.

When using a live center, the tailstock barrel should protrude about 1/2" and not more than 3" (see **Figure 35**).

To remove the live center, back the tailstock barrel all the way into the tailstock casting. The live center will pop out. Be sure to catch it when it comes out to avoid damaging the tip.

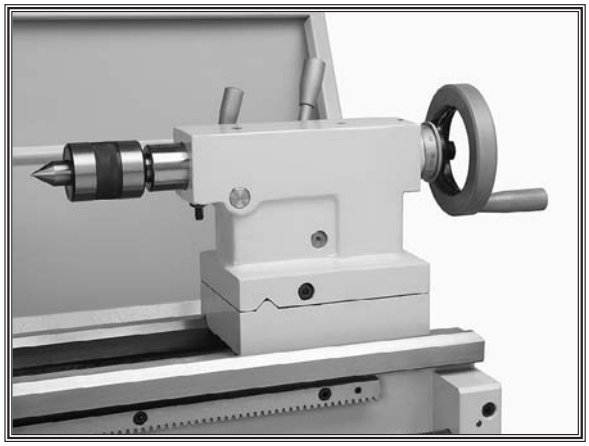


Figure 35. Live center installed in tailstock.

Spindle Spider

⚠CAUTION

Remove the spider screws when not in use. Always disconnect the lathe from power when installing, removing, or adjusting the spider screws. Ignoring this warning can lead to personal injury or machine damage.

Your lathe is equipped with a set of spindle support bolts known as the "spider" (**Figure 36**). Use the spider when a long workpiece has the potential to wobble or vibrate when it extends through the outboard side of the lathe.

The tips of the spider screws have brass wear pads that hold the workpiece without causing indents in the finish.

When installed, make sure to always use the jam nuts to lock each spider screw in position. Merely tightening the spider screws against the workpiece and leaving the jam nuts loose is not safe. The spiders screws may loosen up during lathe operation and crash into the lathe end cover.

Figure 36. Spider.

Steady Rest

The steady rest supports long, small diameter stock that otherwise could not be turned because of deflection. The steady rest fingers are fitted with bearings that maintain consistent non-wearing support throughout the cut. The steady rest can also be used in place of the tailstock to allow for cutting tool access at the end of your workpiece.

To use the steady rest, do these steps:

1. Secure the steady rest to the bedway from below with the locking plate, then snug the mounting bolt (**Figure 37**).

2. Adjust the fingers until the bearings make contact and support the workpiece. Do not over-tighten the fingers or they will cause deflection in the workpiece.

3. Oil the finger bearings and the rolling surfaces while in use to assist in friction-free support.

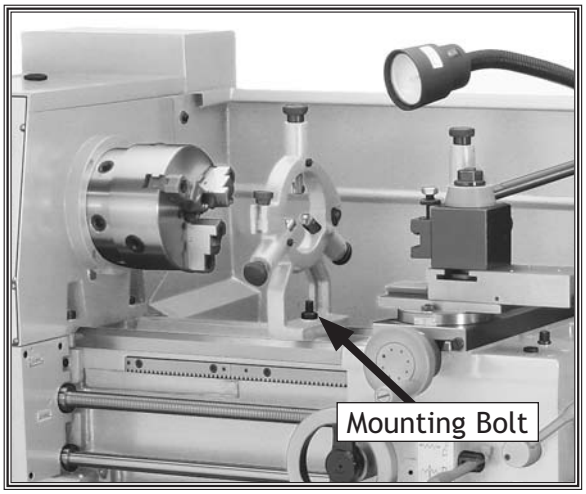


Figure 37. Steady rest in place.

Follow Rest

The follow rest is normally used with small diameter stock to prevent the workpiece from "springing" under pressure from the turning tool. The follow rest fingers are fitted with bearings that maintain consistent non-wearing support throughout the cut.

To use the follow rest, do these steps:

1. Secure the follow rest to the saddle with the two cap screws (**Figure 38**).

2. Adjust the fingers until the bearings make contact and support the workpiece. Do not over-tighten the fingers as to cause deflection in the workpiece.

3. Lubricate the finger bearings and the rolling surfaces while in use to assist in low friction support.

Figure 38. Follow rest secured to saddle.

Feed Direction Lever

NOTICE

NEVER attempt to shift a lever while the lathe is running! And when shifting a lever, NEVER force it. If the lever will not engage, rotate the chuck by hand while keeping light pressure on the lever. As the chuck rotates it aligns the gears and the lever will engage.

Figure 39. Feed direction lever.

Your lathe can cut left or right while feeding or threading, and it can cut across both ways for facing operations. This feed direction is controlled by the feed direction lever shown in **Figure 39**.

When the selection lever is positioned as depicted in **Figure 39**, the carriage will move to the right along the bed or the cross feed will travel away from the operator. The cross feed and longitudinal feed selection is controlled on the apron.

To reverse the direction of the feeding or threading operation, stop the lathe, move the feed direction lever completely to the right or left.

When the lever is positioned in the middle, no gear ratio is selected, and the gear train feeding the apron is in neutral.

Feed Rod Lever

The feed rod can be selected by moving the lever to the left as in **Figure 40.** Use this position for all feed operations.

When the lever is positioned straight up, no drive mechanism is selected and the gear train feeding the apron is in neutral.

When the lever is moved to the right, no gear ratio is selected, and the gear train feeding the apron is in neutral.

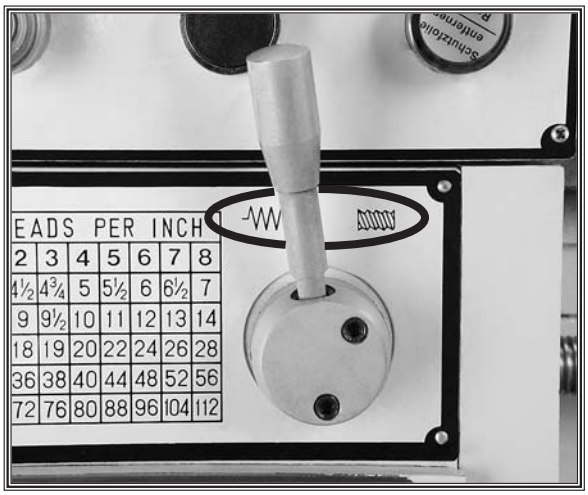


Figure 40. Feed rod lever.

Gearbox Levers

NOTICE

NEVER attempt to shift a lever while the lathe is running! And when shifting a lever, NEVER force it. If the lever will not engage, rotate the chuck by hand while keeping light pressure on the lever. As the chuck rotates it aligns the gears and the lever will engage.

Figure 41. Quick change gearbox.

The two levers (**Figure 41**) at the bottom of the headstock change the feed rate or the number of threads cut per-inch. The left-hand lever engages in alpha positions **A**, **B**, **C**, **D**, and **E**; and the right-hand lever engages in numeric positions **1, 2, 3, 4, 5, 6, 7,** and **8**.

Use the feed rate chart shown in **Figure 42** to position the quick change gearbox levers.

Feed Rate Chart

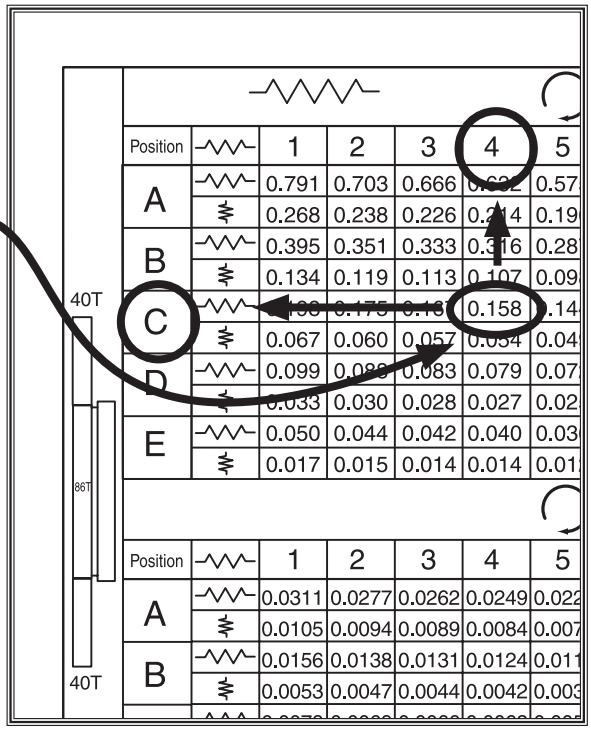
The far left column in the feed rate chart (**Figure 42**) shows which change gears must be installed so the chart will be applicable.

For example: Using the metric chart to make a 0.158mm per revolution longitudinal cut, refer to the row that has this symbol: .

Then put the left-hand lever in the **C** position, and the right-hand lever in the **4** position.

To perform a facing cut, use the chart the same way but refer to the row that has this symbol: .

Note: *When either of the two selector levers are left in the down position, the drive train is disengaged and is in neutral.*



Position		1	2	3	4	5
A		0.791	0.703	0.666	0.632	0.57
		0.268	0.238	0.226	0.214	0.19
B		0.395	0.351	0.333	0.316	0.28
		0.134	0.119	0.113	0.107	0.09
C		0.188	0.175	0.167	0.158	0.14
		0.067	0.060	0.057	0.054	0.04
D		0.099	0.088	0.083	0.079	0.07
		0.033	0.030	0.028	0.027	0.02
E		0.050	0.044	0.042	0.040	0.03
		0.017	0.015	0.014	0.014	0.01

Position		1	2	3	4	5
A		0.0311	0.0277	0.0262	0.0249	0.022
		0.0105	0.0094	0.0089	0.0084	0.007
B		0.0156	0.0138	0.0131	0.0124	0.011
		0.0053	0.0047	0.0044	0.0042	0.003

Figure 42. Feed rate chart.

This symbol indicates longitudinal feed.
This symbol indicates cross feed rates.

Carriage/Cross Feed Lever

Longitudinal and cross slide powered motions are controlled by the carriage/cross feed lever. The lever pivots through two stops that require moving the lever left and right as well as up and down. Moving this lever upward activates the automatic longitudinal feed. Moving the lever downward activates the cross slide (**Figure 43**).

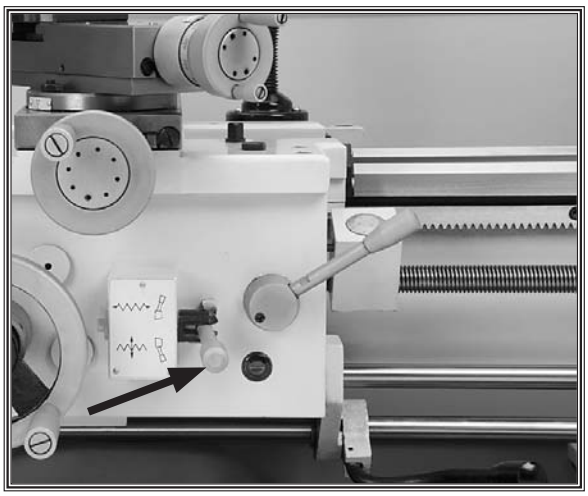


Figure 43. Carriage/cross feed lever in neutral position.

Half-Nut Lever and Inch Threading

The half-nut lever clamps and releases the half-nut, which clamps around the leadscrew (**Figure 44**). The lever is only engaged while cutting threads.

Note: *If the apron feed lever is engaged, the half-nut lever is blocked from use; and if the half-nut lever is engaged the apron lever is blocked from use. If both levers are engaged at the same time apron damage will occur.*

After the carriage has been returned, the thread dial tells you when to re-engage the half-nut and resume threading (**Figure 44**).

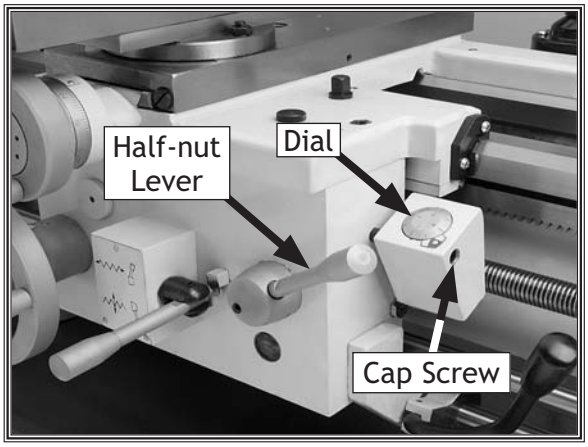


Figure 44. Threading dial and half-nut lever.

When the cap screw is loosened, the thread dial housing pivots so its gear can be engaged or disengaged from the lead screw. When engaged, the dial will turn when the lead screw and spindle are turning.

When the half-nut lever is engaged, the dial stops turning. By carefully engaging the half-nut as the appropriate line or number passes by the indicator mark, a thread can be re-entered for its next pass of the cutter without wiping out the previous cut.

The thread dial chart shown in **Figure 45** indicates when to use the thread dial if inch threads are to be cut. If an inch thread is divisible by 8, then you don't need not use the thread dial. If cutting metric threads, you cannot use the thread dial.

4	N	8	ANY	16	ANY	32	ANY	64	ANY
4½	1	9	1-3	18	N	36	ALL	72	ANY
4¾	1	9½	1	19	1	38	N	76	ALL
5	1	10	N	20	ALL	40	ANY	80	ANY
5½	1	11	1-3	22	N	44	ALL	88	ANY
6	1-3	12	ALL	24	ANY	48	ANY	96	ANY
6½	1	13	1-3	26	N	52	ALL	104	ANY
7	1	14	N	28	ALL	56	ANY	112	ANY

ANY = Engage at any time
ALL = Engage on all lines
N = Engage on any Number
1-3 = Engage on 1 or 3
1 = Engage only on 1

Figure 45. Thread dial chart.

While other thread pitches may be achieved, the Model M1112 is designed so that gear changes are not needed for cutting inch threads. However, you will have to move the feed direction lever to the direction of thread you want to cut, and then move the feed rod lever to the right. To get the needed threads in inches, you will then use the standard thread chart (**Figure 46**) to determine which positions to move the quick change levers.

Example:
If the desired threads are 11 threads per inch (**Figure 46**), move the quick change gearbox levers to positions **B** and **5**. As the thread dial chart shows, engage the half-nut when the thread dial reads **1** or **3** and begin your first cut.

When the cut is complete, disengage the half-nut and manually return the carriage to the beginning of the cut. Watch the dial. When the **1** or the **3** on the dial comes around to the indicator mark, engage the half-nut. Begin your second pass. Repeat this process until the desired depth of cut is achieved.

POSITION	THREAD PER INCH								
A B C D E	1	2	3	4	5	6	7	8
A	4	4½	4¾	5	5½	6	6½	7
B	8	9	9½	10	11	12	13	14
C	16	18	19	20	22	24	26	28
D	32	36	38	40	44	48	52	56
E	64	72	76	80	88	96	104	112

Figure 46. Standard thread chart.

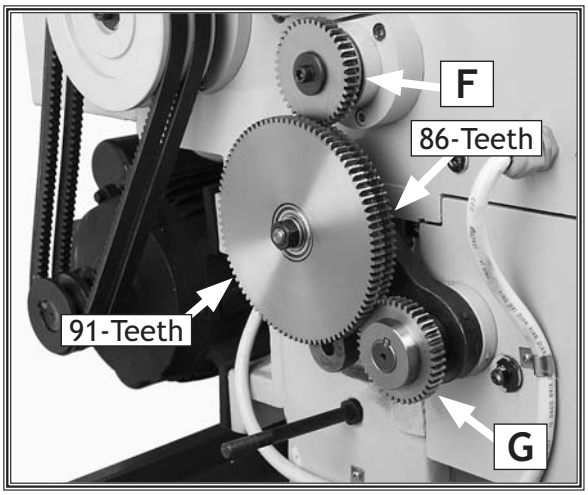


Figure 47. Change gear locations.

Change Gears & Metric Threading

This lathe can cut 29 different metric threads, but gear changes are required to cut all of the listed metric threads. These gear changes take place on the left hand end of the machine (**Figure 47**).

The chart is divided into 3 main columns, starting from the left: Gear diagram, Combination of Gears and $^{m}/_{m}$ Per Pitch.

To use the chart, do these steps:

1. Find the desired pitch in the chart (**Figure 48**).
2. Below the $^{m}/_{m}$ Per Pitch label are numbers. Find the corresponding number above the desired pitch and change the right hand quick change lever to that position.

   Note: *The holes on the quick change gearbox are letterd and numbered from left to right.*
3. To the left of the desired pitch is a small column with a letter. This letter indicates placement of the left hand quick change lever. Move the lever to the corresponding location.

CHANGE GEAR CHART FOR $^{m}/_{m}$ SIZE

COMBINATIONS OF GEARS F		G	Position	$^{m}/_{m}$ PER PITCH 1	2	3	4	5	6
26	ANY	60	A					2.0	
			B					1.0	0.9
			C	0.7				0.5	0.45
			D	0.35				0.25	
			E						
27	ANY	60	A						
			B		1.2				
			C		0.6				
			D		0.3				
			E						
35	ANY	60	A	3.5					
			B	1.75					
			C	0.875	0.8				
			D		0.4				
			E		.2				
45	ANY	60	A	4.5					3.0
			B	2.25					1.5
			C	1.125					0.75
			D						
			E						
50	ANY	60	A	5					
			B	2.5	2.2				
			C	1.25	1.1				
			D		0.55				
			E						

FROM LEFT TO RIGHT

Figure 48. Metric thread chart.

4. In the "Combination of Gears" column (**Figure 49**) are 3 small columns. The numbers below **F** and **G** represent the number of gear teeth on a change gear. Find the required change gears that have the corresponding number of teeth as stated in the chart to the left of the desired pitch.

5. Open the gear and belt cover.

6. Loosen the 17mm arm-support hex nut and rotate the bracket so the middle gear moves away from gear **F** (**Figure 49**).

7. Loosen the 17mm gear-support hex nut and slide the middle gear away from gear **G**.

8. Use a 3mm hex wrench and remove the cap screw and remove change gear **F**.

9. Use a 5mm hex wrench to loosen the set screw in the hub of gear **G**, and pull the gear off of the shaft.

10. Replace change gears **F** and **G** with the gears that will produce your desired metric thread pitch and tighten the fasteners to hold the gears on the shafts.

11. Slide the appropriate middle gear against gear **G** until they mesh with (0.002" to 0.004" backlash) and tighten the cap screw.

12. Rotate the appropriate middle gear against gear **F** until they mesh with (0.002" to 0.004" backlash) and tighten the cap screw.

Example:
If the desired metric pitch is 1.25mm, move the quick change levers to positions **1** and **C**. The "Combination of Gears" column shows that the **F** position change gear needs 50 teeth and the **G** position change gear needs 60 teeth (**Figure 49**). A diagram on the left side of the chart shows that the 50 tooth change gear meshes with the 91 tooth middle gear and the 60 tooth change gear meshes with the 86 tooth middle gear.

Remember, you cannot use the thread dial for the metric threads. You must keep the half-nut lever engaged throughout the whole threading process until the threads are complete.

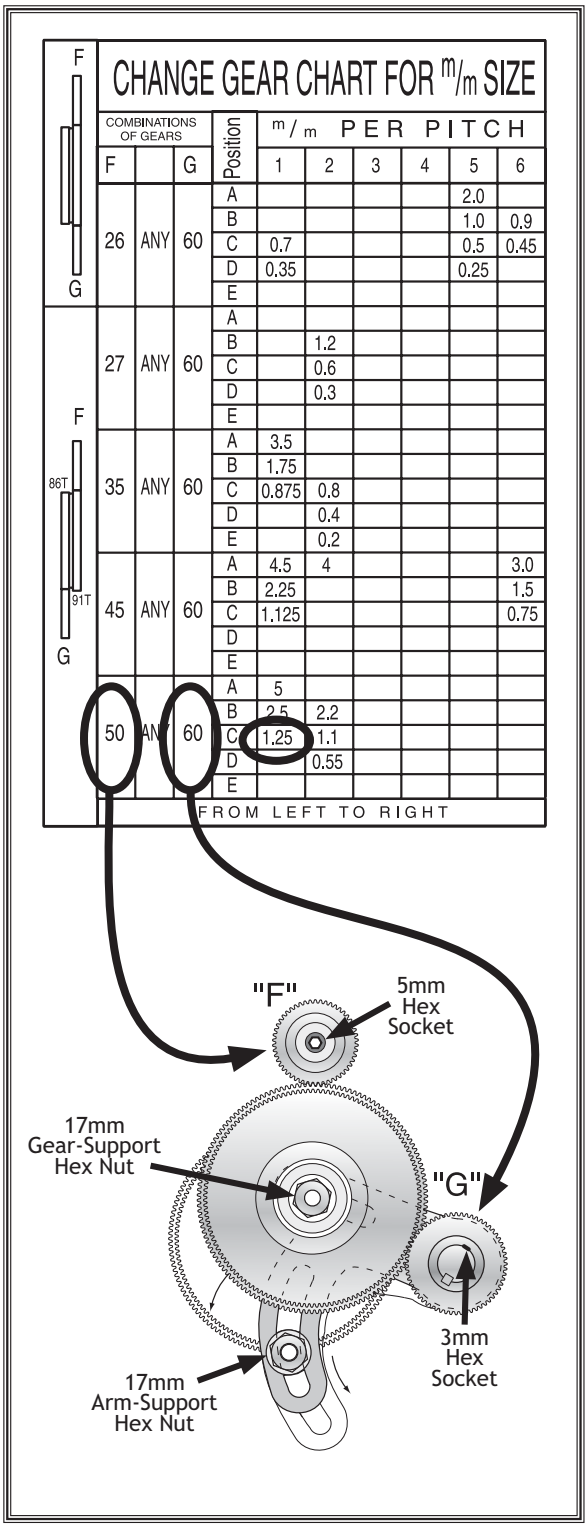


Figure 49. Metric thread chart and change gear placement.

Carriage Handwheels

Carriage Handwheel

The carriage handwheel (**Figure 50**) moves the carriage left or right along the bed. This manual control is necessary when setting up the machine for turning or when manual movement is desired during turning operations.

Cross Slide Handwheel

The cross slide handwheel moves the cross slide toward and away from the work. Turning the dial clockwise moves the slide toward the workpiece. The graduated dial can be adjusted by holding the handwheel with one hand and turning the dial with the other.

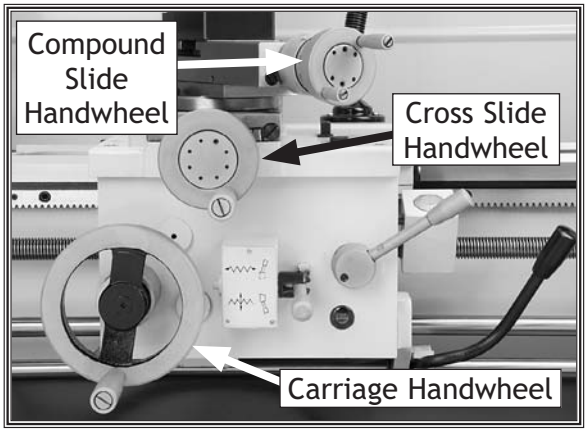


Figure 50. Handwheel locations.

Compound Slide Handwheel

The compound slide handwheel (**Figure 50**) controls the position of the cutting tool relative to the workpiece. This slide is adjustable to any angle. The graduated dial is adjustable using the same method as the dial on the cross slide. Angle adjustment is locked by hex nuts on the base of the top slide.

Tool Post & Holder

Figure 51 shows the quick change tool post and holder. Cutting tools can be secured and removed by tightening or loosening the clamping screws in the top of the holder. A threaded stud is mounted in the top of the holder and has a knurled thumb wheel. Rotating the thumb wheel allows for adjustment of the tool holder so the cutting tool can be centered. The handle on the tool post can be rotated to lock and unlock the tool holder onto the dovetail ways. The tool post may be rotated by loosening the nut at the top of the tool post.

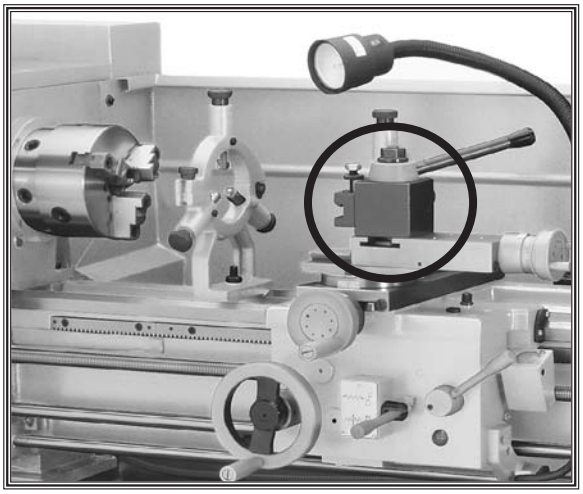


Figure 51. Quick change tool post and holder.

Tailstock

The tailstock (**Figure 52**) serves many functions. The primary use is for holding centers and drill chucks. The barrel has a Morse taper #3 bore and is imprinted with graduations in millimeters and inches.

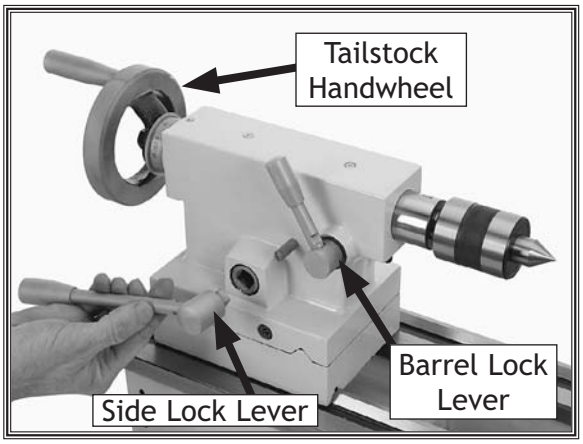


Figure 52. Tailstock controls.

Tailstock Handwheel

Turning the handwheel advances or retracts the barrel in the tailstock. The graduated dial on the handwheel is adjustable.

Barrel Lock Lever

This lever locks the tailstock barrel in place.

Side Lock Lever & Torque Tightening

This removable lever locks the tailstock in place on the lathe bed. The socket that it fits into will accept a 1/2" drive torque wrench.

For repeating very accurate vertical alignment positioning time after time, remove the side lock lever (**Figure 52**), and use an inch-pound torque wrench fitted with a 3/8" to 1/2" drive adapter to lock the tailstock into position. You can use a foot-pound torque wrench but DO NOT exceed 40 lbs/ft of torque or you may damage the ways and the tailstock. When tightening the tailstock down to the maximum torque of 40 lbs/ft, the center point will be drawn down approximately 0.006". Always verify the exact draw down position on your tailstock center point.

Cutting Shallow Tapers with Tailstock

The tailstock can be offset to cut a shallow taper on a shaft or barrel.

To set up the tailstock to cut tapers, do these steps:

1. Lock the tailstock in position.

2. Alternately loosen and tighten the left and right offset adjustment screws until the desired offset is indicated on the scale (**Figure 53**).

3. Retighten the lock screw.

   Note: *To return the tailstock back to the original position, repeat the process until the centered position is indicated on the scale.*

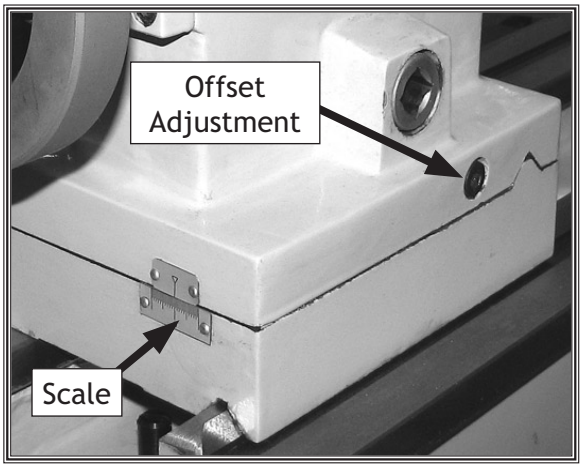


Figure 53. Right offset adjustment.

Drilling with Tailstock

To install a tapered drill chuck, do these steps:

1. With the tailstock locked, unlock the quill lock lever.

2. Turn the quill feed handle clockwise to extend the quill about one inch, and insert a tapered drill arbor or a tapered drill shank into the quill until the taper is firmly seated.

3. Advance the tailstock to the workpiece, lock the tailstock position, and use the handwheel to feed the drill bit into the rotating workpiece.

4. To remove the chuck arbor or drill bit, turn the quill feed handwheel until the chuck is pushed out from the tailstock.

Gap Piece Removal

The Model M1112 comes equipped with a gap piece below the spindle that can be removed for turning large diameter parts or when using a large diameter faceplate.

To remove the gap piece, do these steps:

1. DISCONNECT THE LATHE FROM POWER!
2. Using a 14mm open wrench, remove the two index pins by turning the hex nuts (see **Figure 54**) clockwise to draw the pins out of the gap piece.
3. Using an 8mm hex wrench in an alternating pattern, remove the five cap screws (**Figure 54**) that hold the gap piece in place.
4. Tap the outside of the gap piece with a dead blow hammer or wooden mallet to loosen, and with the help of an assistant, remove the gap piece.

To reinstall the gap piece, do these steps:

1. Clean all mating surfaces completely and inspect and remove any burrs. ALL MATING SURFACES MUST BE ABSOLUTELY CLEAN!
2. Apply a thin film of light machine oil to all freshly cleaned surfaces.
3. Carefully place the gap piece in position, and use blocks of wood and clamps to get mating surfaces back into alignment.
4. Remove the hex nuts from the index pins, and tap the pins back into place so they seat completely and hold the gap piece in alignment.
5. Reinstall the cap screws and lightly snug in place.
6. Tighten the appropriate cap screws in an alternating pattern to regain the gap piece alignment.
7. Install the index pin hex nuts so they are snug but do not draw the index pins out again.

NOTICE

The gap piece is installed, then ground at the factory for precise fit and alignment during lathe assembly. Factors during the remaining assembly apply additional forces to the gap; therefore, replacing the gap to the original position is very difficult and sometimes impossible.

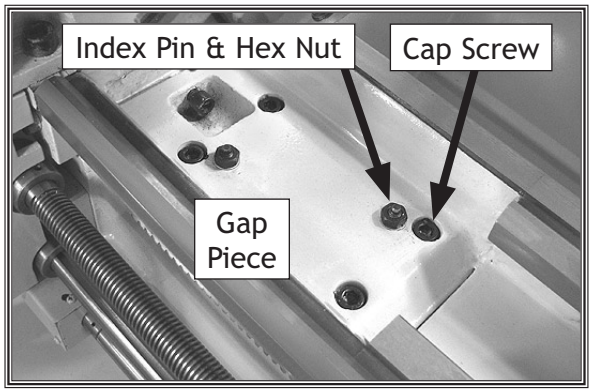


Figure 54. Lathe gap piece.

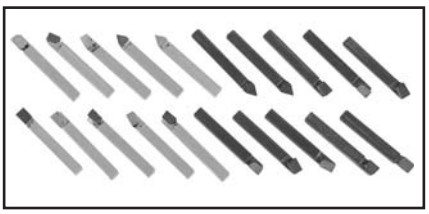
Model M1112 Lathe Accessories

The following lathe accessories may be available through your local Woodstock International Inc. Dealer. If you do not have a dealer in your area, these products are also available through online dealers. Please call or e-mail Woodstock International Inc. Customer Service to get a current listing of dealers at: (360) 734-3482 or at sales@woodstockint.com.

The **Model M1066 Shop Fox Heavy-duty Triple Bearing Live Center.** This Triple Bearing Live Center is hardened to a 61-65 Rockwell rating, and has a unique head driving mechanism that eliminates dust, chips and coolant from entering the internal workings. Made with high quality precision bearings, this MT#3 Live Center has an accuracy of 0.0003".

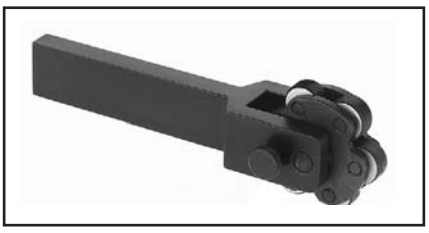
The **Model M1066 Shop Fox Bull Nose Rolling Center** is constructed for large, hollow workpieces like pipes, tubing and other material that would "swallow" a regular live center. This MT#3 Bull-Nose Center is designed for heavy-duty use. Although primarily designed for metal lathes, our rolling centers also work well on wood lathes. Don't worry about dust getting in the bearings—they're sealed!

The **Model M1075 Shop Fox 20-pc. Carbide Tipped Tool Bit Set**. An exceptional value for 1/2" shank carbide lathe tool bits! Twenty piece sets offer tremendous savings over bits sold individually. Includes ten C-2 grade bits and ten C-6 grade bits for cutting steel and alloys.



The **Model M1068 Shop Fox Live Center Set.** A super blend of quality and convenience, this MT#3 Live Center Set offers seven interchangeable tips. High-quality needle bearings prolong tool life and special tool steel body and tips are precision ground. Supplied in wooden box.

The **Shop Fox 6-Head Knurling Tools.** These versatile Knurling Tools feature robust construction, self centering capability and lock knob. Comes supplied with fine, medium and coarse knurls for forming diamond patterns.



MODEL	SIZE	Knurl
M1094	5/16" x 3/4" x 5"	5/8" x 5/16" x 7/32"
M1095	1/2" x 1 1/8" x 6 1/2"	3/4" x 3/8" x 1/4"

MAINTENANCE

General Maintenance

Before every use, check for loose mounting bolts, chuck mounting, safety feature operation, worn or damaged electrical cords, and any other condition that could hamper the safe operation of this machine.

General Cleaning

Take the time to wipe down and oil your lathe after use. Do not leave metal chips and cutting fluid on the ways. We recommend using a good quality way oil.

General Lubrication

Saddle

Apply lubrication to the saddle (**Figure 55**) through the two ball fittings on the top face of the saddle and one near the saddle handwheel. Make sure the apron oil level is ¾ full as seen in the through the sight glass. Change the oil for the first time after one month of operation, and then at six month intervals. We recommend using Mobil Vactra 2 Oil or an ISO 68 equivalent. The apron reservoir holds 1 pint of oil.

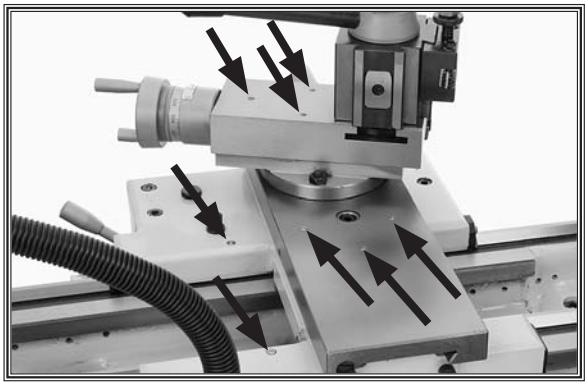


Figure 55. Saddle, compound, and cross-slide lubrication.

Cross-Slide and Compound Slide

The ball oilers on the slides (**Figure 55**) should be oiled the same as the saddle.

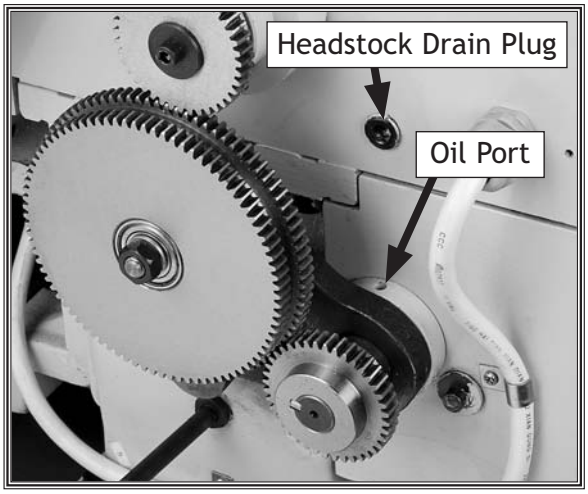


Figure 56. Headstock lubrication.

Headstock

The oil in the headstock should be changed immediately after break-in. Then every six months, depending on usage. Change the headstock and apron oil more frequently if extreme machine use is common. We recommend using Mobil DTE Light or an ISO 32 equivalent. The headstock reservoir holds 3½ quarts of oil.

Quick Change Gearbox

Lubrication for the gearbox (**Figure 57**) is provided through two oil points labeled "Oil Nipple." Add a squirt or two of oil after every three-to-four hours of use.

Figure 57. Quick change gearbox lubrication.

Slides and Ways

Wipe the ways with a clean rag and apply oil before and after each use. Apply oil to the bedways and other bare metal parts to also protect the lathe from rust and pitting.

Lead Screw and Feed Rod

Be sure to clean and lubricate the leadscrew, feed rod and switch control rod (**Figure 58**). The lead screw and feed rod have a bearing on the tailstock end support that will require one to two squirts of oil before every use.

Tailstock

The tailstock (**Figure 59**) is fitted with two ball oilers. Apply oil each week or after every five uses (depending on the frequency of operation). Be sure to clean the tailstock slide and lift the tailstock and squirt a few drops of oil on the ways. Remove the tailstock once a month and wipe the bottom thoroughly and reinstall, if using water-based cutting fluid, do this daily.

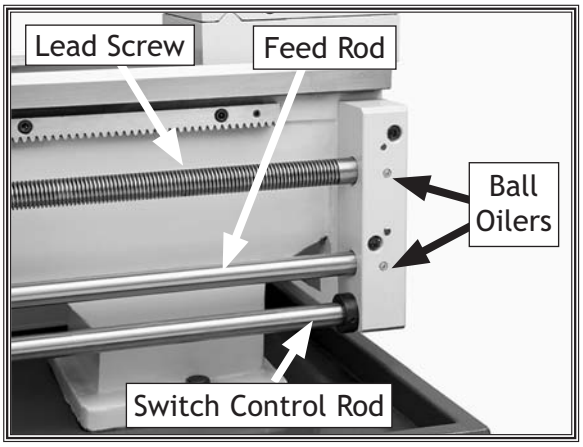


Figure 58. Lead screw, feed rod and switch rod lubrication.

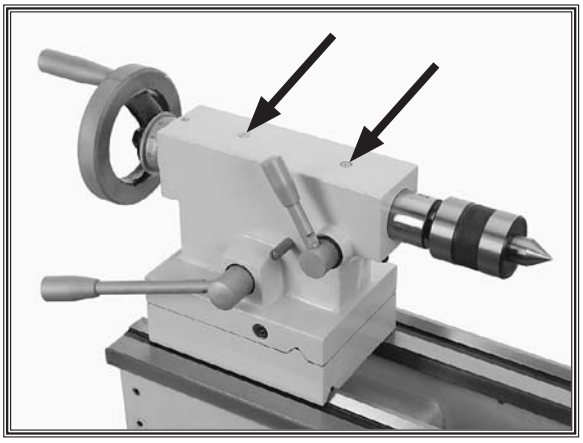


Figure 59. Tailstock lubrication.

Coolant System

To maintain the coolant system, do these steps:

1. DISCONNECT THE LATHE FROM POWER!
2. Remove the drain plug from the tank, drain the coolant out, and discard properly as hazardous waste.
3. Pull the clear plastic drain tube from the tank and let it hang free (**Figure 60**).
4. Using a magnet, remove metal chips from the tank.
5. Using a rag, remove remaining material from the tank.
6. Refill the tank with new coolant, and insert the clear plastic drain tube back into the tank.

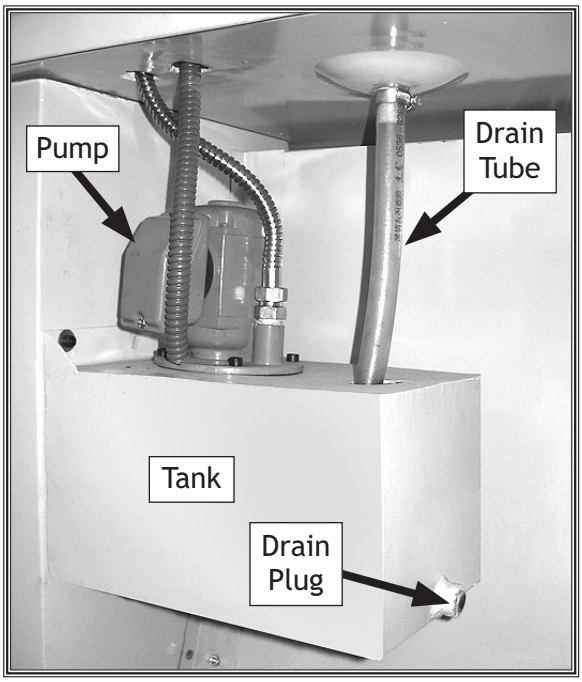


Figure 60. Coolant pump and reservoir.

WARNING

BIOLOGICAL and POISON HAZARD!

The reservoir on this machine is designed to store coolant. During storage coolant can grow dangerous microbes or collect toxic heavy metals, making the coolant a biological and poison hazard.

To prevent infections and poisoning, use the correct personal protection equipment when handling coolant and change it often.

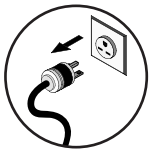
To properly dispose of toxic coolant, follow federal, state, and fluid manufacturer procedures.

NOTICE

Failure to follow lubrication guidelines will lead to rapid deterioration of lathe components.

SERVICE
Troubleshooting

Review the troubleshooting and procedures in this section to fix your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (360) 734-3482.



Motor & Gearbox

Symptom	Possible Cause	Possible Solution
Motor will not start.	1. Main power panel switch is ***OFF***. 2. Emergency switch is pushed in. 3. Circuit breaker or fuse has tripped. 4. No voltage or open connection. 5. Capacitor is at fault. 6. Motor direction switch is at fault. 7. Power switch or magnetic contactor is at fault. 8. Motor is at fault.	1. Turn the main power panel switch ***ON***. 2. Rotate emergency switch so it pops out. 3. Seek an electrician to troubleshoot and repair the shop power supply. 4. Test circuit, replace wires and connections as required. 5. Replace capacitor. 6. Replace switch. 7. Replace power switch or magnetic contactor. 8. Replace motor.
Fuses or circuit breakers trip open.	1. Short circuit in line cord or plug. 2. Short circuit in motor or loose connections. 3. Incorrect fuses or circuit breakers in power supply.	1. Inspect cord or plug for damaged insulation and shorted wires. 2. Inspect all connections on motor for loose or shorted terminals or worn insulation. 3. Install correct fuses or circuit breakers.
Machine is loud belt slips when cutting. Overheats or bogs down in the cut.	1. Excessive depth of cut. 2. RPM or feed rate wrong for operation. 3. Dull cutters. 4. Belt is slipping. 5. Belt is at fault.	1. Decrease depth of cut. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace cutters. 4. Remove grease or oil on belt or pulleys/tighten belt tensioner against low range belt. 5. Replace belt.
Gear change levers will not shift into position.	1. Gears not aligned in headstock.	1. Rotate spindle by hand until gear falls into place.
Loud, repetitious noise coming from machine at or near the motor.	1. Pulley set screws or keys are missing or loose. 2. Motor fan is hitting the cover.	1. Inspect keys and set screws. Replace or tighten if necessary. 2. Tighten fan or shim cover, or replace items.

Continued on next page

Troubleshooting

Operation and Work Results

Symptom	Possible Cause	Possible Solution
Entire machine vibrates excessively upon start-up and while running.	1. Workpiece is unbalanced. 2. Worn or broken gear present. 3. Chuck or faceplate has become unbalanced. 4. Spindle bearings at fault.	1. Reinstall workpiece so it is as centered with the spindle bore as possible. 2. Inspect gears and replace if necessary. 3. Rebalance chuck or faceplate; contact a local machine shop for help. 4. Tighten or replace spindle bearings.
Cutting tool or machine components vibrate excessively during cutting.	1. Tool holder not tight enough. 2. Cutting tool sticks too far out of tool holder; lack of support. 3. Gibs are out of adjustment. 4. Dull cutting tool. 5. Incorrect spindle speed or feed rate.	1. Check for debris, clean, and retighten. 2. Reinstall cutting tool so no more than 1/3 of the total length is sticking out of tool holder. 3. Tighten gib screws at affected component. 4. Replace or re sharpen cutting tool. 5. Use the recommended spindle speed.
Can't remove tapered tool from tailstock quill.	1. Quill had not retracted all the way back into the tailstock. 2. Debris was not removed from taper before inserting into quill.	1. Turn the quill handwheel until it forces taper out of quill. 2. Always make sure that taper surfaces are clean.
Cross slide, compound rest, or carriage feed has sloppy operation.	1. Gibs are out of adjustment. 2. Handwheel is loose. 3. Lead screw mechanism worn or out of adjustment.	1. Tighten gib screw(s). 2. Tighten handwheel fasteners. 3. Tighten any loose fasteners on lead screw mechanism.
Cross slide, compound rest, or carriage feed handwheel is hard to move.	1. Gibs are loaded up with shavings or grime. 2. Gib screws are too tight. 3. Backlash setting too tight (cross slide only). 4. Bedways are dry.	1. Remove gibs, clean ways/dovetails, lubricate, and readjust gibs. 2. Loosen gib screw(s) slightly, and lubricate bedways. 3. Slightly loosen backlash setting by loosening the locking screw and adjusting the spanner ring at the end of the handle. 4. Lubricate bedways and handles.
Bad surface finish.	1. Wrong RPM or feed rate. 2. Dull tooling or poor tool selection. 3. Too much play in gibs. 4. Tool too high.	1. Adjust for appropriate RPM and feed rate. 2. Sharpen tooling or select a better tool for the intended operation. 3. Tighten gibs. 4. Lower the tool position.
Inaccurate turning results from one end of the workpiece to the other.	1. Headstock and tailstock are not properly aligned with each other.	1. Realign the tailstock to the headstock spindle bore center line.
Chuck jaws won't move or don't move easily.	1. Chips lodged in the jaws.	1. Remove jaws, clean and lubricate chuck threads, and replace jaws.
Carriage won't feed, or hard to move.	1. Gears are not all engaged or broken. 2. Gibs are too tight. 3. Loose screw on the feed handle. 4. Lead screw shear pin has sheared.	1. Adjust gear positions or replace. 2. Loosen gib screw(s) slightly. 3. Tighten. 4. Correct for cause of shear pin breakage, and replace shear pin.
Tailstock quill will not feed out of tailstock.	1. Quill lock lever is tightened down.	1. Turn lever counterclockwise.

Gibs

NOTICE

When adjusting gibs, keep in mind that the goal of gib adjustment is to remove unnecessary sloppiness from the slide movement without causing them to bind. Loose gibs may cause poor finishes on the workpiece. Over-tightening may cause premature wear.

There are three areas with gib adjustments on the Model M1112: the cross-slide gib, the compound slide gib, and the saddle gib.

Cross Slide Gib

The gib on the cross-slide (**Figure 61**) is adjusted by the two screws located at each end. To adjust, loosen the set screw located along the edge of the cross-slide. This set screw is provided for locking the slide for certain operations. After making the adjustments detailed below, tighten the set screw until it just touches the gib.

The gib is wedge shaped and by loosening the screw closest to the operator and then tightening the opposite screw, the slide will become looser. Conversely, loosening the screw farthest away from the operator and tightening the closer screw will tighten the gib. Do not over tighten.

Move the cross slide and adjust the gib until you feel a slight drag.

Compound Gib

The compound gib (**Figure 62**) is adjusted by the same method as the gibs on the cross-slide, except the screw closest to the operator (when the compound slide is aligned with the cross slide) must be loosened and the screw farthest from the operator tightened to make the gib tighter.

Figure 61. Adjusting the cross-slide gib.

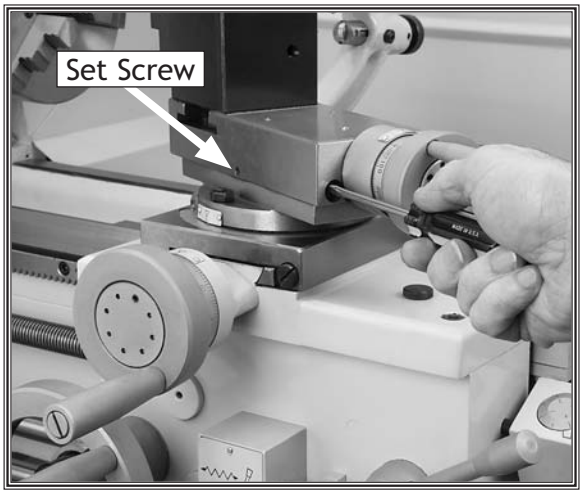


Figure 62. Adjusting the compound rest gib.

SERVICE

Saddle Gib and Saddle Lock

The saddle is supplied with a square head bolt (**Figure 63**) on the front right hand side of the slide. This bolt locks the saddle in place for increased rigidity when making face cuts. Before making adjustments to the saddle gib, make sure that this bolt is loose by turning it counterclockwise.

It is important that this gib stay properly adjusted. A loose gib will cause finish problems in a workpiece. A gib adjusted too tightly will cause premature half-nut wear.

The gib for the saddle is located on the bottom of the back edge of the slide (**Figure 63**). The tension on this gib is maintained by four set screws with jam nuts. By loosening the jam nuts and tightening the set screws, the gib will tighten. Loosening the set screws will loosen the gib. The gib strip is properly adjusted when a slight drag is felt while moving the apron. Do not over-tighten.

It is important the four set screws are tightened evenly. When tightening the jam nuts, hold the set screw in position with a hex wrench.

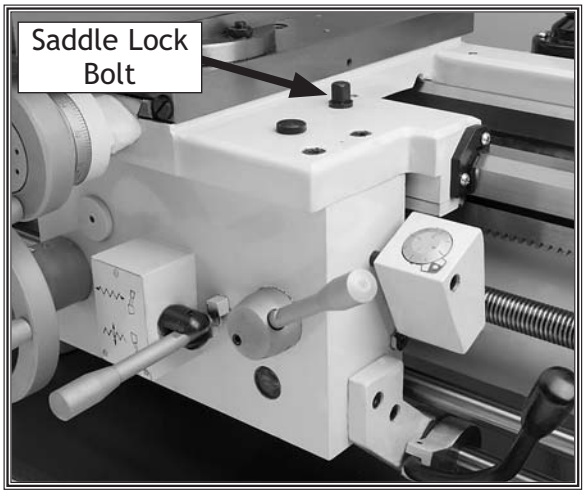


Figure 63. Saddle lock bolt and saddle gib screws.

Half-Nut Adjustment

If the half-nut threads do not fully mesh with the leadscrew, the quality of the workpiece threads may suffer. If the half-nut clamps the leadscrew too tightly, rapid half-nut wear and a non-release or delayed half-nut release condition could occur, which can cause chuck and carriage crash. It is far better to have a half-nut that clamps slightly loose rather than having it clamp too tight.

To adjust the half-nut, do these steps:

1. Engage the half-nut lever, loosen the thread dial cap screw, and rotate the dial out of the way (**Figure 64**).

2. Loosen the lock nuts, and while rocking the carriage handwheel back and forth slightly, tighten the adjustment screws until snug to seat the gibs.

3. Back out each screw 1/4 turn and tighten the lock nuts.

4. Verify the half-nut lever easily clamps and un clamps on the lead screw without binding. **REMEMBER**, threading cuts that are too deep or have a feed rate that is too fast may prevent or delay half-nut lever disengagement and cause a carriage crash.

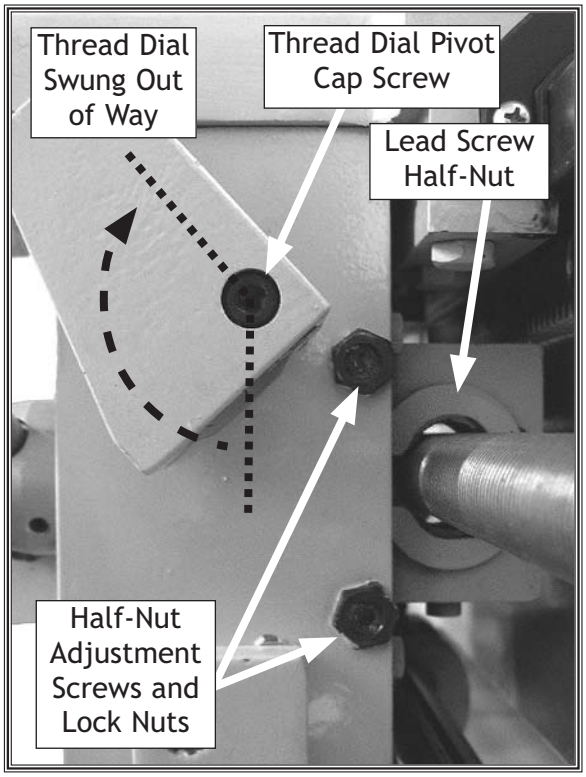


Figure 64. Half-nut gib adjustment location.

Adjusting/Replacing V-Belts

To replace or adjust the V-belts, do these steps:

1. DISCONNECT LATHE FROM POWER!
2. Open the change gear access door.
3. Loosen four motor mount bolts (**Figure 65**) and replace the belts as a matched set if required.
4. With one hand, push and hold the motor in the downward position so the belts are tight.
5. While holding the motor down and keeping the belts tight, tighten the motor mount bolts.
6. Close the access door and lock it shut.

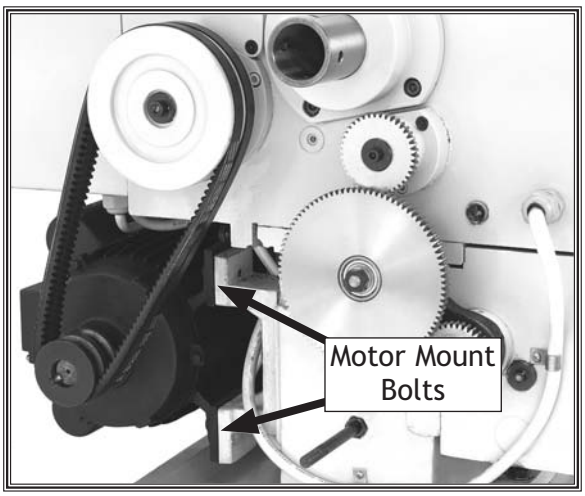


Figure 65. Motor mount and belt tension adjustment.

Spindle Bearing Preload

This lathe is shipped from the factory with the spindle bearing preload adjusted. If the spindle ever develops a bit of end-play and the workpiece finish suffers, you can adjust the bearing preload to remove the end-play and improve the workpiece finish. Adjusting the bearing preload requires using a spanner wrench or a punch and hammer. You can either purchase the spanner wrench at a tool store or fabricate one, using the diagram shown below in **Figure 66**.

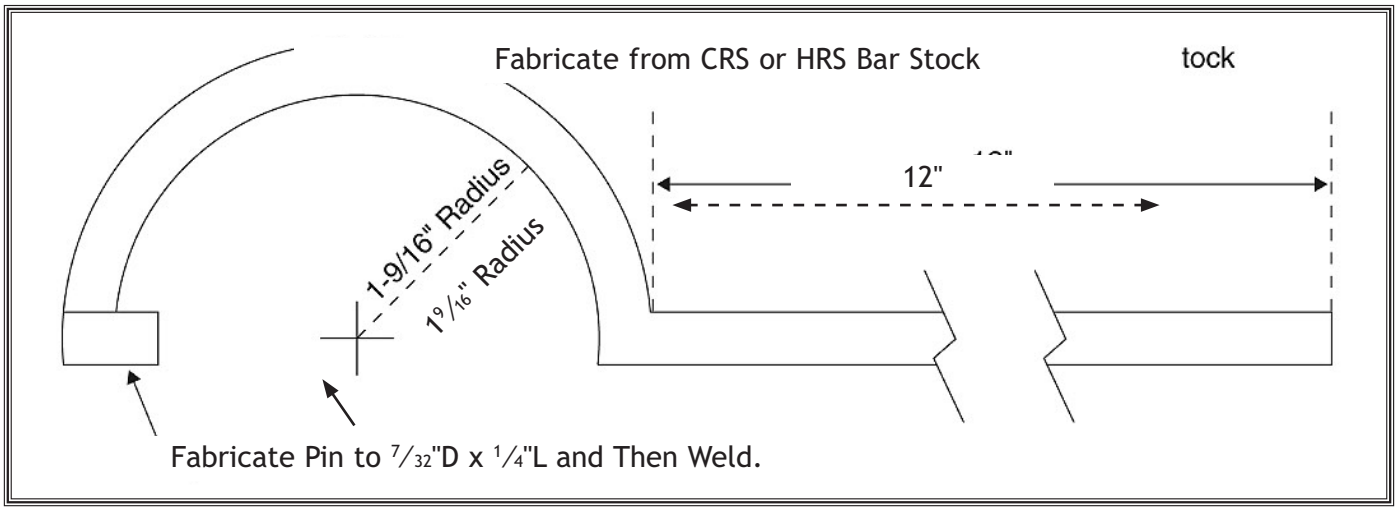


Figure 66. Spanner wrench diagram.

To adjust the preload, do these steps:

1. Run the lathe for 20 minutes on high speed to bring the headstock to a normal temperature.

2. DISCONNECT THE LATHE FROM POWER!

3. Remove the chuck, shift the spindle to neutral, then remove the outboard spindle cover (**Figure 67**).

4. Place the chuck key in the cam-lock socket and keep the spindle from rotating.

5. Using a spanner wrench or hammer-and-punch, loosen the outer spanner lock nut (**Figure 68**) by turning it counterclockwise, then remove it.

6. Loosen the inner spanner nut one turn.

   Note: *You may have to tap on the outboard spindle tube as explained in **Step 7** to help unload the spindle and break the spanner nut loose.*

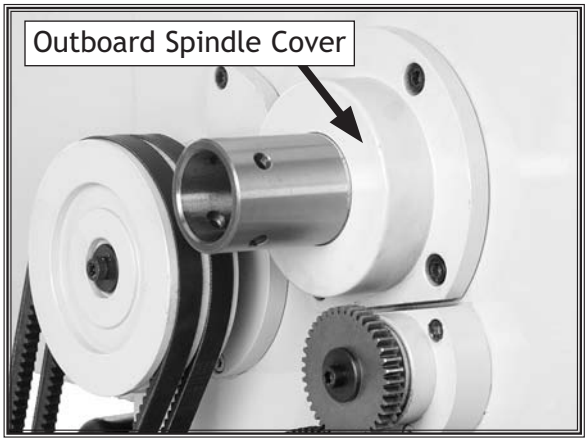


Figure 67. Outboard spindle cover.

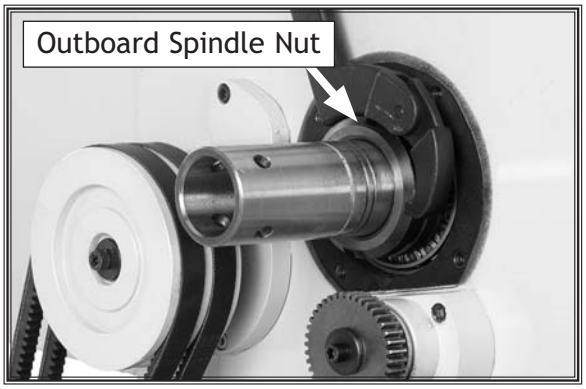


Figure 68. Loosening outboard spindle nut.

SERVICE

7. Place a wooden block over the outboard end of the spindle, hit it soundly with a small sledge or heavy dead blow hammer. Your goal is to slide the spindle forward just enough to introduce spindle end-play that you can feel by hand.

8. Place a dial indicator on the cross slide and move the carriage toward the headstock until the contact point of the indicator touches the spindle face (**Figure 69**).

9. Move the carriage an additional 0.100" toward the headstock.

10. Insert the chuck key into a cam socket and prevent the spindle from turning. Tighten the inner spanner nut until you see the motion of the needle in the dial indicator just barely stop moving (**Figure 70**). During the spanner nut tightening process, rock the spindle back and forth slightly with the chuck key to make sure the spindle tapered roller bearings seat properly in the tapered bearing races.

When the dial indicator needle stops moving, there will not be any spindle end-play nor bearing preload. It is essential that you find this point without tightening the spanner nut too much and inadvertently preloading the spindle bearings.

Since it can take great effort to turn the inner spanner nut, you may find it difficult to know if you have gone past the zero end-play point or not. You may find it easiest to have someone watch the dial for you while you tighten the inner spanner nut. If you think you may have gone past the zero end-play point, take the time to unload the bearings as described earlier, then re-tighten the inner spanner nut until you know you have reached the correct setting.

When you are confident that you have adjusted the inner spanner nut until zero spindle end-play and preload exists, you now must move the spanner inward an additional 0.001" to set the preload.

11. To set the preload, tighten the spanner nut an additional 0.16" along its circumference. See **Figure 71** for the example of this measurement.

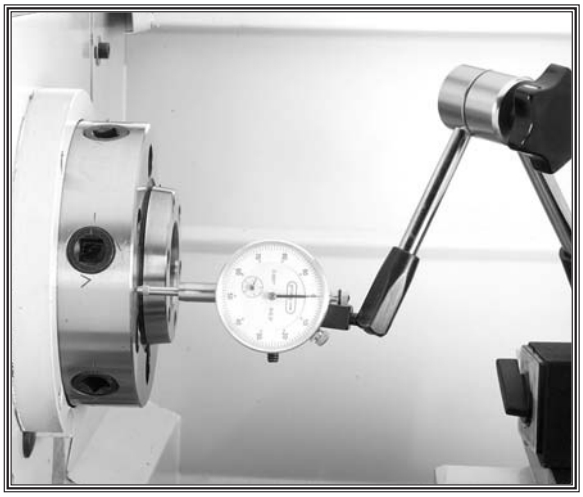


Figure 69. Dial indicator set up.

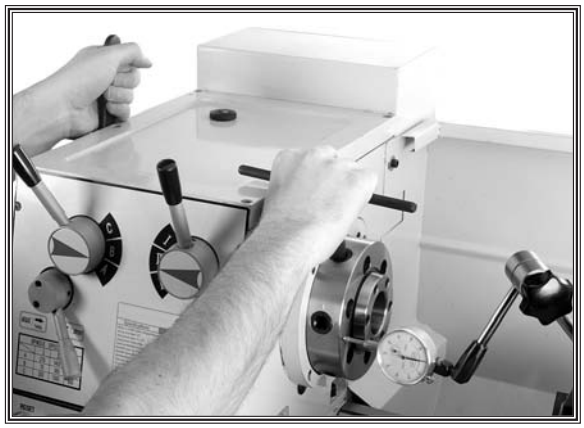


Figure 70. Adjusting spindle bearings.

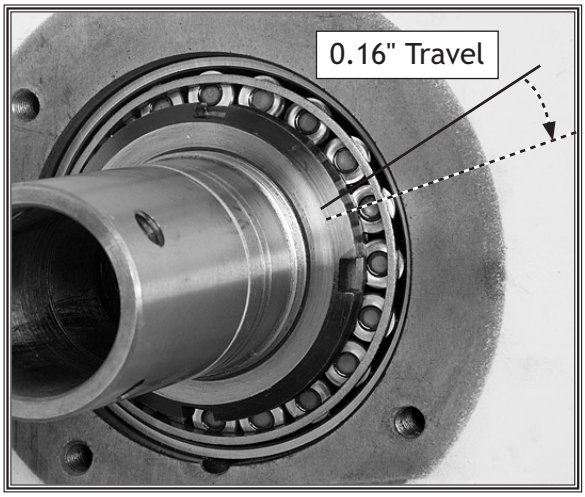


Figure 71. Final spanner nut rotation.

12. Without causing the inner spanner nut to tighten any further, install and tighten the outer spanner nut against the inner nut. Do not overtighten the outer spanner nut because additional preload can force the bearings even tighter against the races in the headstock and cause the headstock to compress, crack, or cause bearing failure.

13. Position the gasket correctly, and re-install the outboard spindle cover.

To confirm that the bearings are correctly preloaded, do these steps:

1. Make sure all safety precautions have been taken and set up steps are complete to make the lathe fully operational.

2. Install the chuck and tighten the jaws.

3. Set the spindle speed to its highest setting.

4. Connect the lathe to power and turn the lathe spindle ***ON***.

5. Let the lathe run for 20 minutes.

6. Turn the spindle ***OFF***, disconnect lathe from power, and check the temperature of the spindle.

— If the spindle nose is slightly warm to the touch, you have correct bearing preload.

— If the spindle nose is hotter than you can comfortably keep your hand on, the preload is too tight and you must repeat bearing preload adjustment procedure.

M1112 Main Electrical Box Wiring Diagram

COLOR KEY

BLACK	Bk
WHITE	Wt
GREEN	Gn
RED	Rd
BLUE	Bl
BROWN	Br
YELLOW	Yl
PINK	Pk
LT/BLUE	Lt/Bl
TURQUOISE	Tq
GREEN W/YELLOW STRIPE	Yl/Gn

To Work Lamp Page 57
Power Supply Page 57
To Spindle Motor Page 54
To Pump Motor Page 56
To Control Panel Page 53
To Spindle ON/OFF Switch Page 55

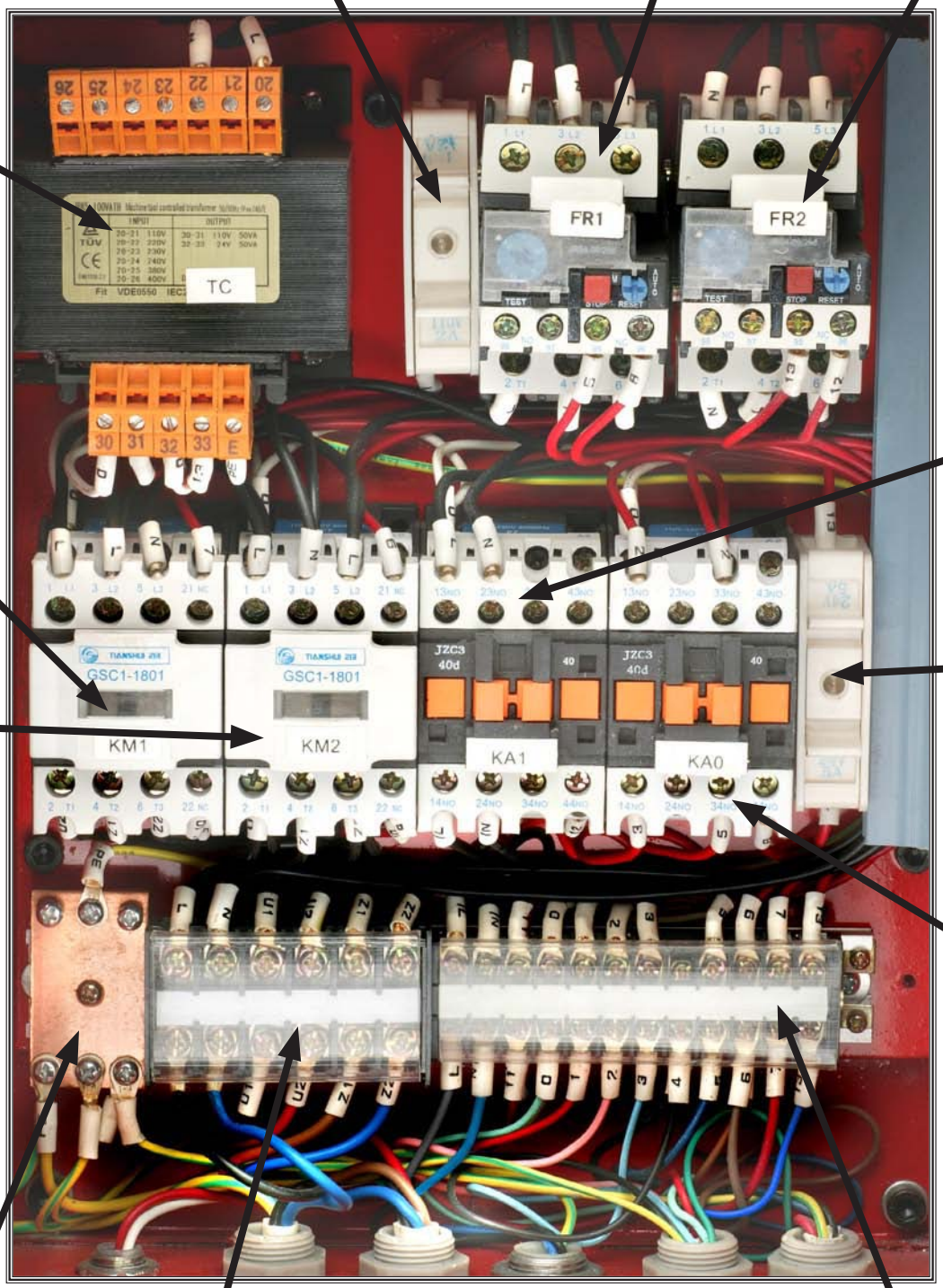


Figure 72. Electrical box wiring.

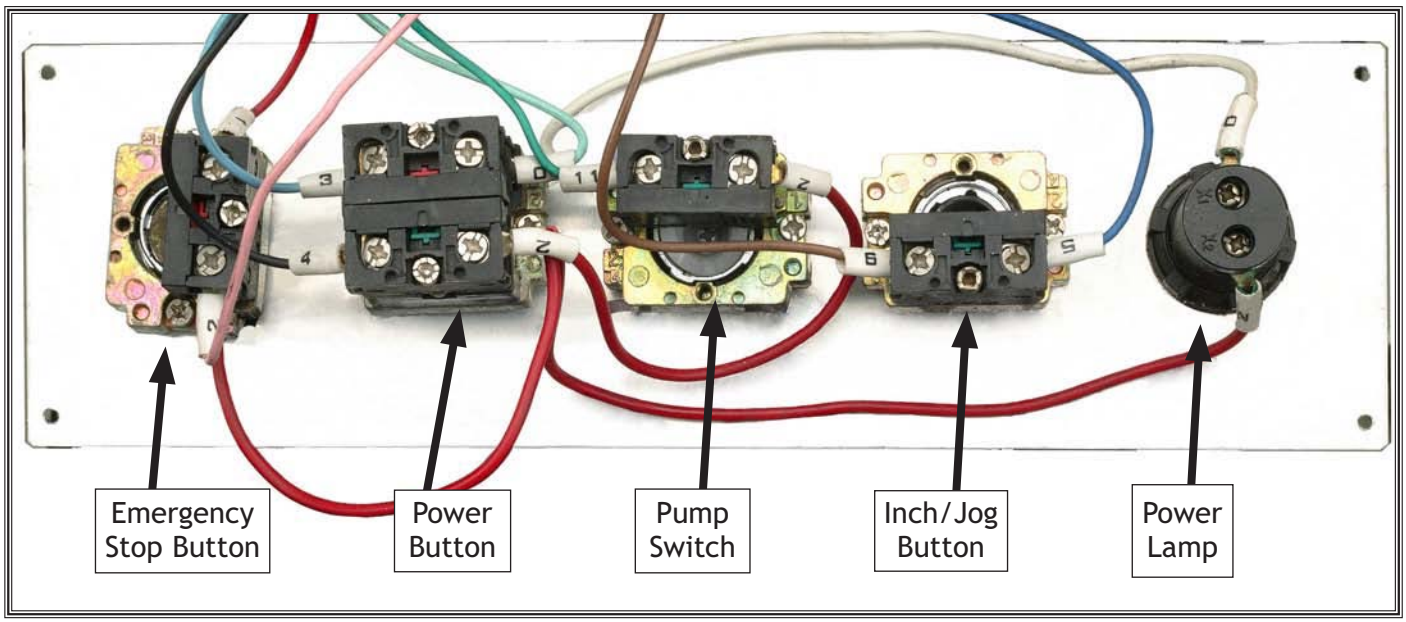
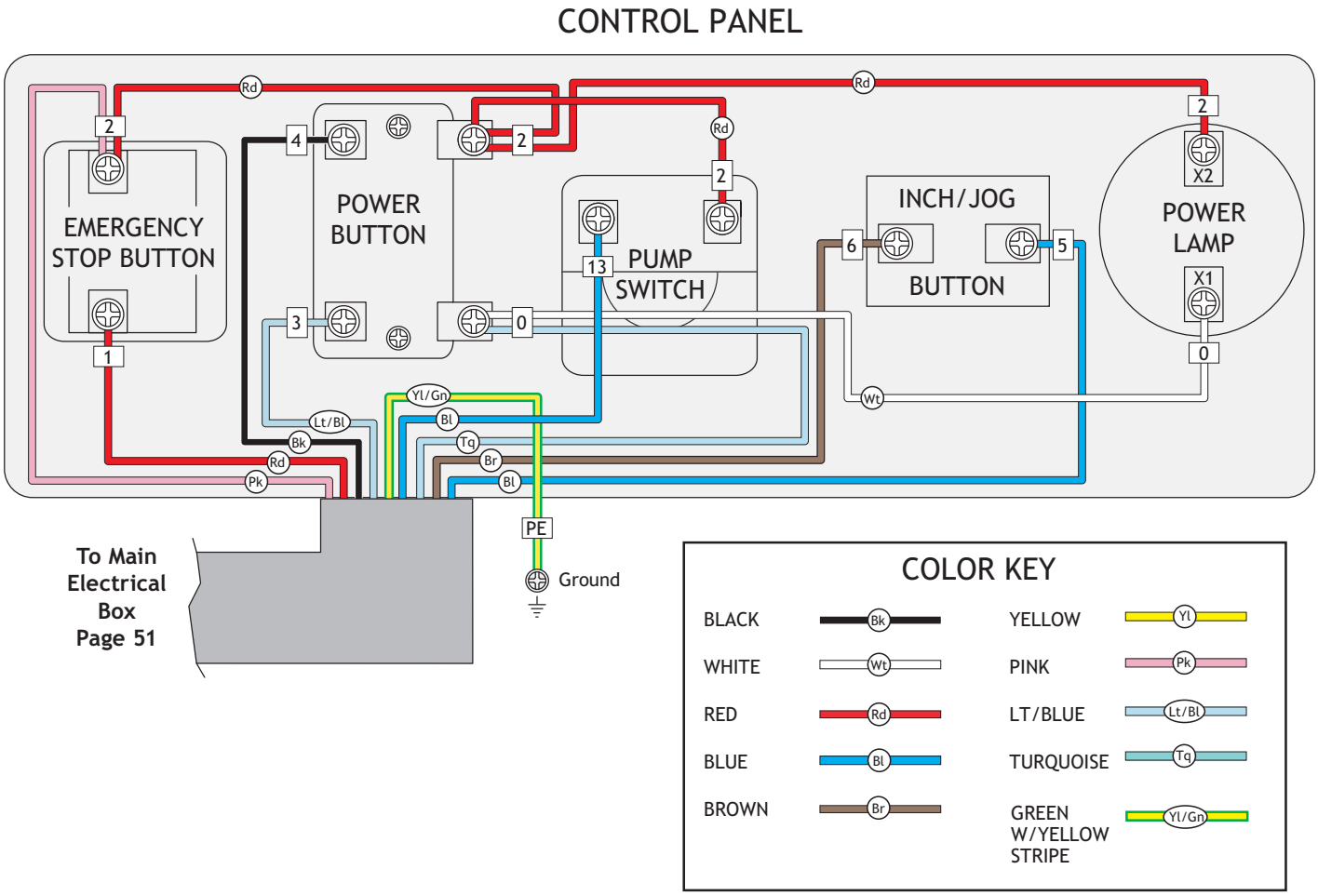


Figure 73. Control panel wiring.



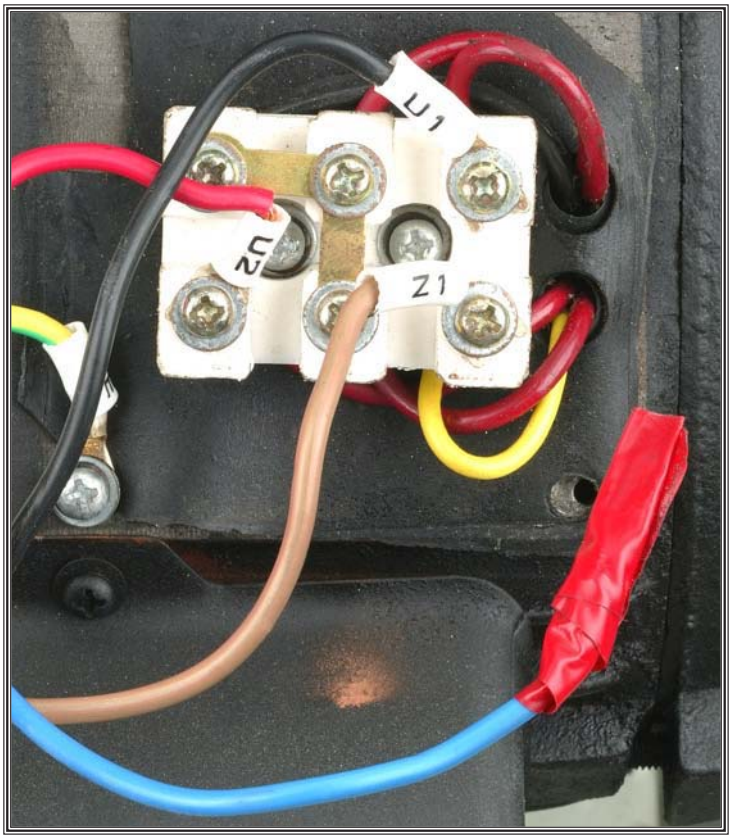
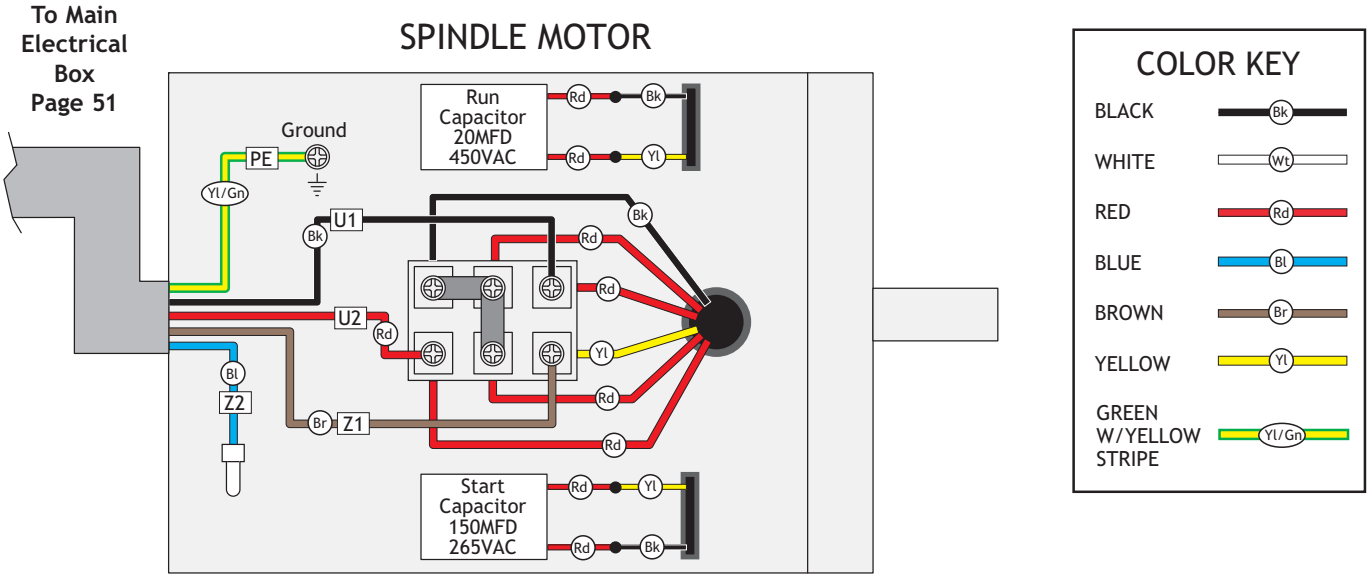


Figure 74. Spindle motor wiring.



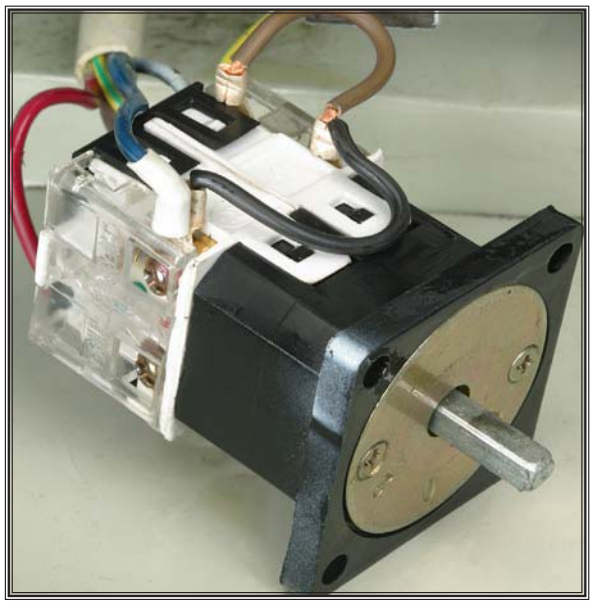


Figure 75. Spindle ON/OFF switch (Left side view).

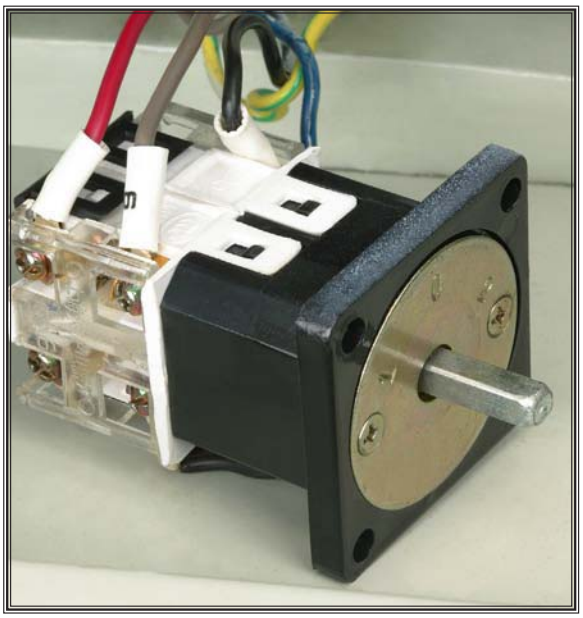
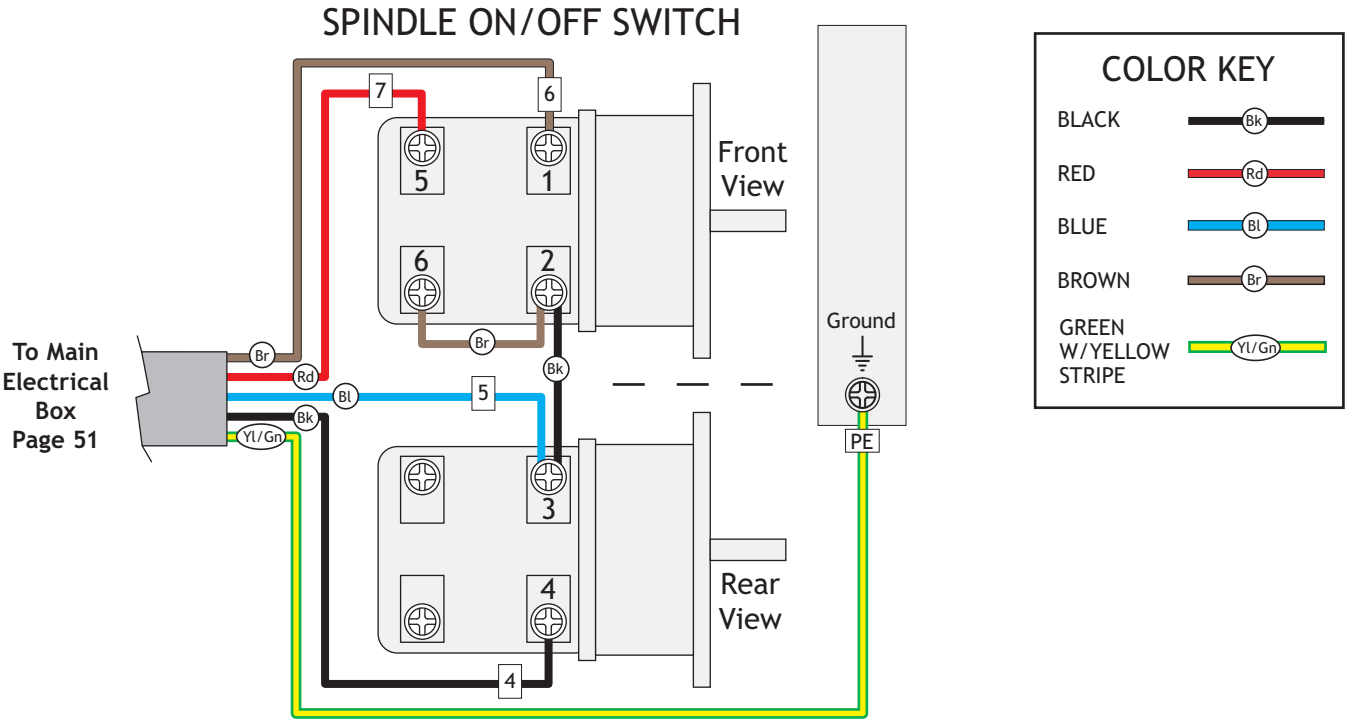
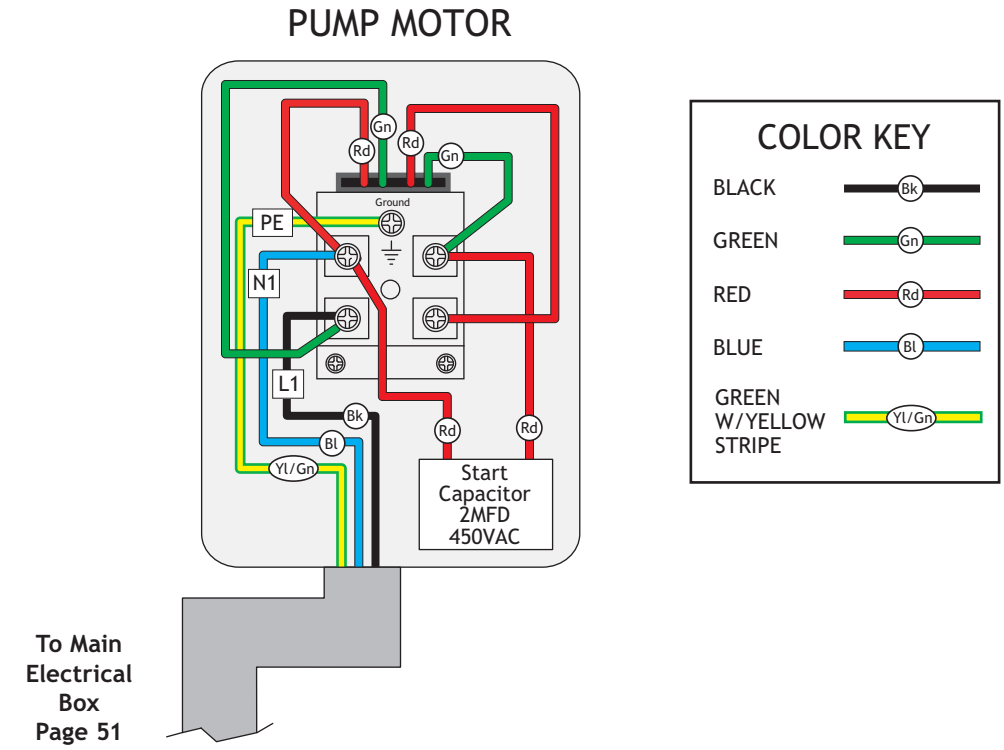


Figure 76. Spindle ON/OFF switch (Right side view).



SERVICE

Figure 77. Pump wiring.



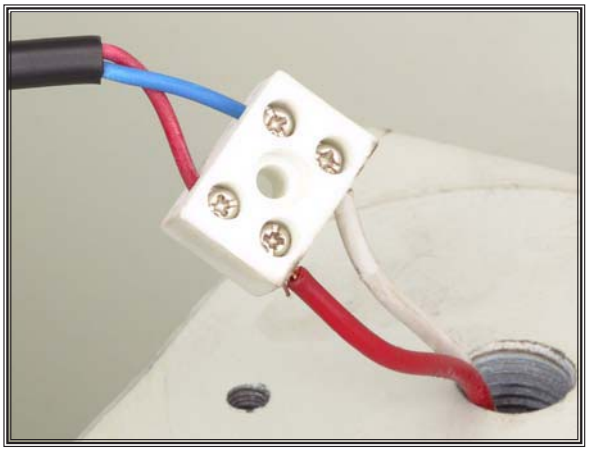
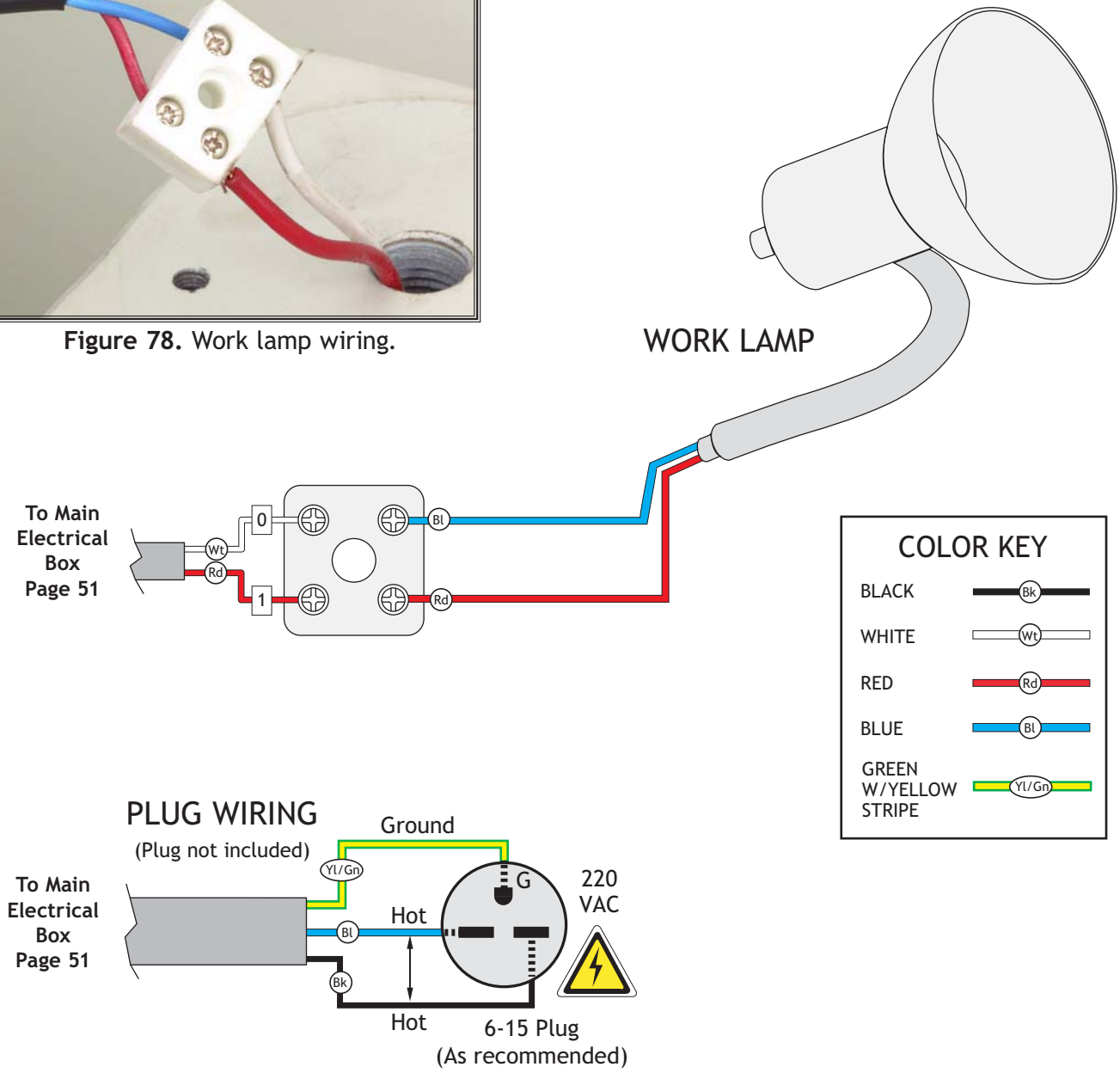
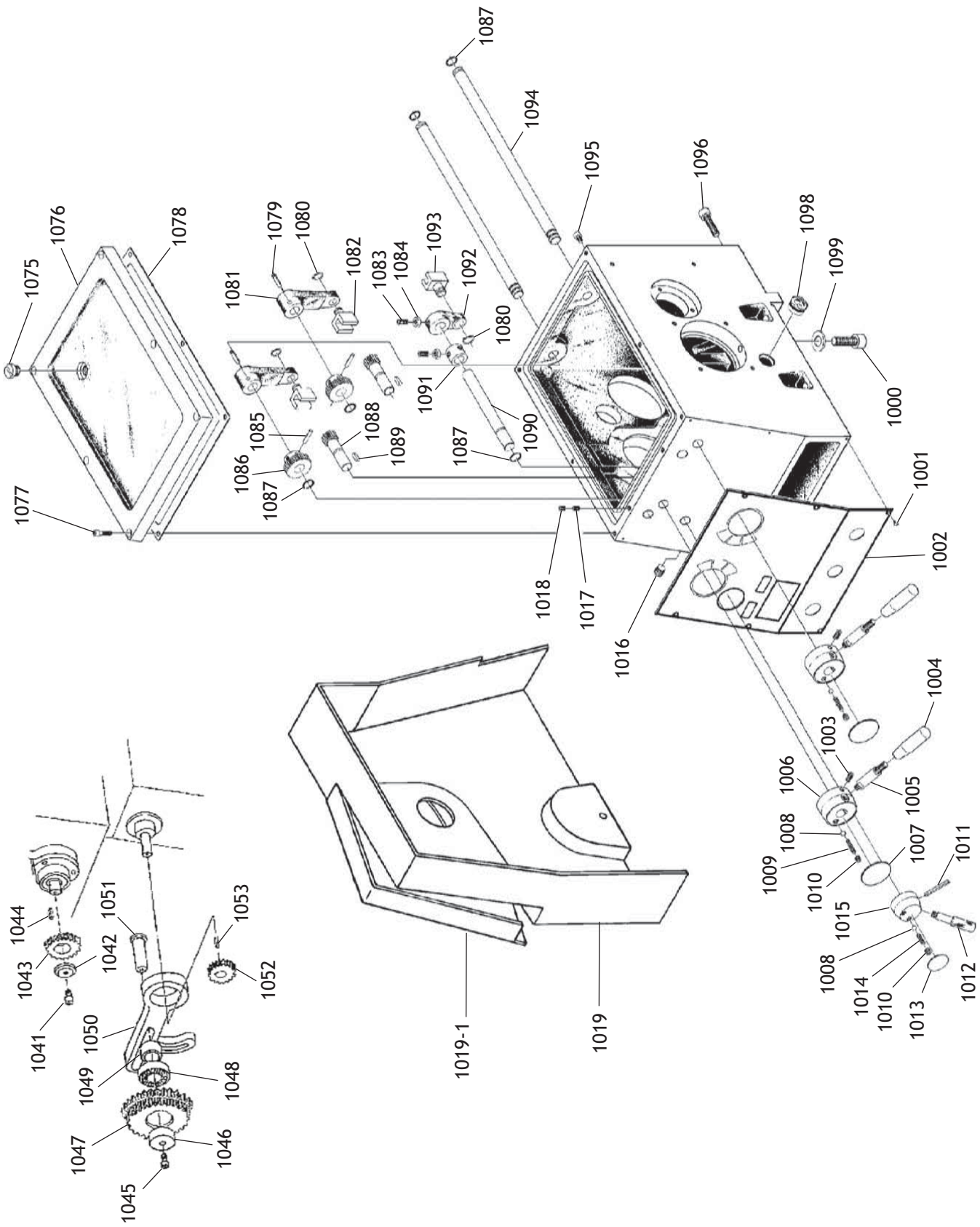


Figure 78. Work lamp wiring.



Headstock Shifters and Change Gears

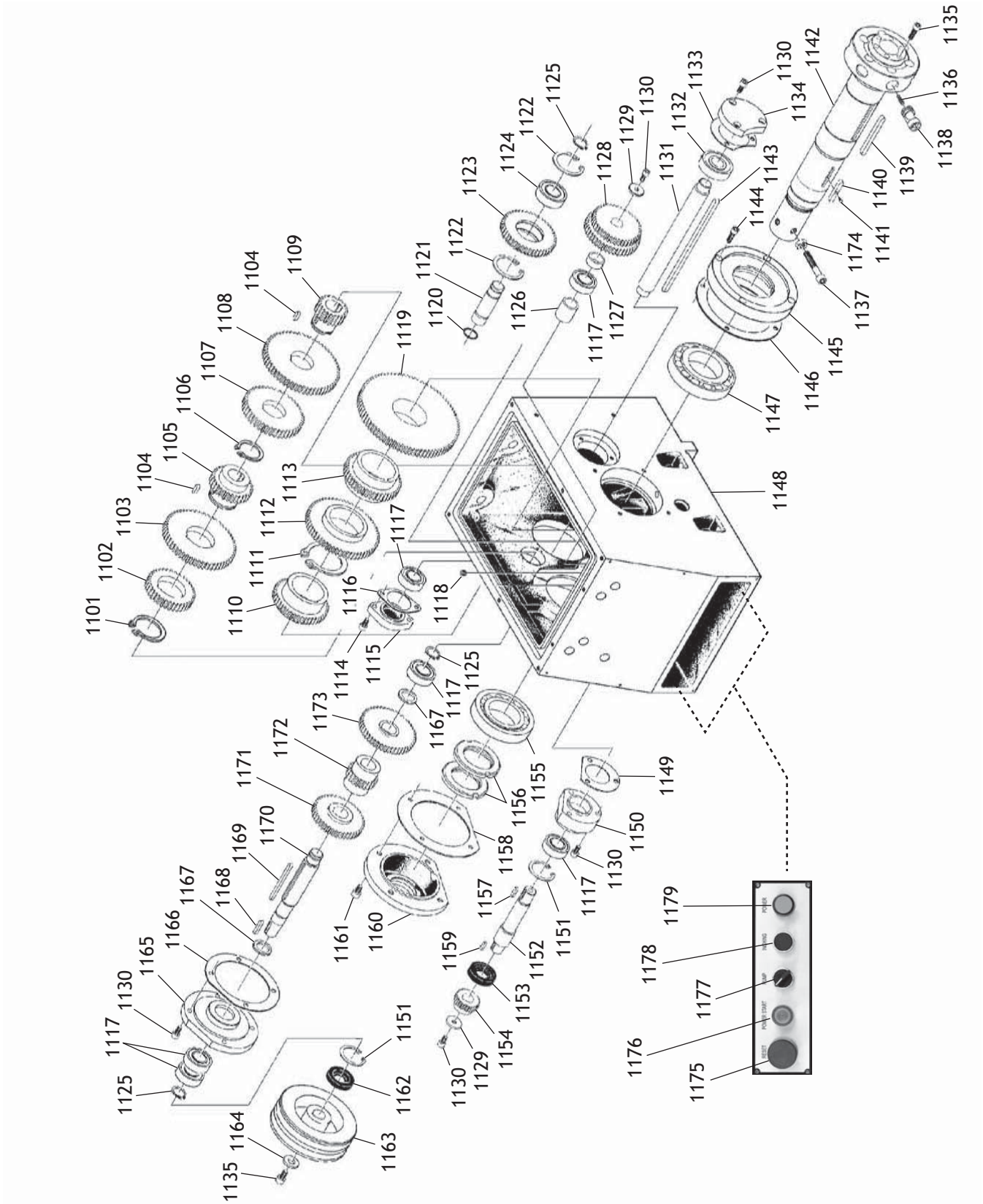


Headstock Shifters and Change Gear Parts

REF	PART #	DESCRIPTION
1000	XPSB77M	CAP SCREW M12-1.75 X 30
1001	XPS12M	PHLP HD SCR M3-.5 X 6
1002	XM11121002	FRONT CONTROL PLATE
1003	XPSS04M	SET SCREW M6-1 X 12
1004	XM11121004	HANDLE KNOB
1005	XM11121005	HANDLE STUD
1006	XM11121006	HANDLE HUB
1007	XM11121007	INFORMATION PLATE
1008	XM11121008	STEEL BALL 6MM
1009	XM11121009	COMPRESSION SPRING
1010	XPSS20M	SET SCREW M8-1.25 X 8
1011	XM11121011	TAPER PIN
1012	XM11121012	HANDLE
1013	XM11121013	INFORMATION PLATE
1014	XM11121014	COMPRESSION SPRING
1015	XM11121015	HANDLE HUB
1016	XM11121016	OIL PLUG
1017	XPSS01M	SET SCREW M6-1 X 10
1018	XPSS02M	SET SCREW M6-1 X 6
1019	XM11121019	COVER
1019-1	XM11121019-1	SPIDER SAFETY COVER
1041	XPSB26M	CAP SCREW M6-1 X 12
1042	XM11121042	SPECIAL WASHER
1043	XM11121043	GEAR 40T
1044	XPK12M	KEY 5 X 5 X 30
1045	XPSB26M	CAP SCREW M6-1 X 12
1046	XM11121046	SPECIAL WASHER
1047	XM11121047	STEP GEAR
1048	XP6202	BALL BEARING 6202ZZ

REF	PART #	DESCRIPTION
1049	XM11121049	BUSHING
1050	XM11121050	SHIFTING ARM
1051	XM11121051	SHAFT
1052	XM11121052	GEAR 40T
1053	XPK12M	KEY 5 X 5 X 30
1075	XM11121075	OIL PLUG
1076	XM11121076	COVER
1077	XPSB06M	CAP SCREW M6-1 X 25
1078	XM11121078	GASKET
1079	XPRP05M	ROLL PIN 5 X 30
1080	XPR03M	EXT RETAINING RING 12MM
1081	XM11121081	SHIFTING ARM
1082	XM11121082	SHIFTING FORK
1083	XPSS06M	SET SCREW M8-1.25 X 16
1084	XPN03M	HEX NUT M8-1.25
1085	XPRP49M	ROLL PIN 5 X 25
1086	XM11121086	GEAR 38T
1087	XM11121087	O-RING 11.2 X 2.65
1088	XM11121088	PINION SHAFT
1089	XPK94M	KEY 5 X 5 X 8
1090	XM11121090	SHAFT
1091	XM11121091	COLLAR
1092	XM11121092	SHIFTING ARM
1093	XM11121093	SHIFTING FORK
1094	XM11121094	SHAFT
1095	XPSB04M	CAP SCREW M6-1 X 10
1096	XPSB13M	CAP SCREW M8-1.25 X 30
1098	XM11121098	OIL SIGHT GLASS
1099	XPW06M	FLAT WASHER 12MM

Headstock Gearing and Control Panel



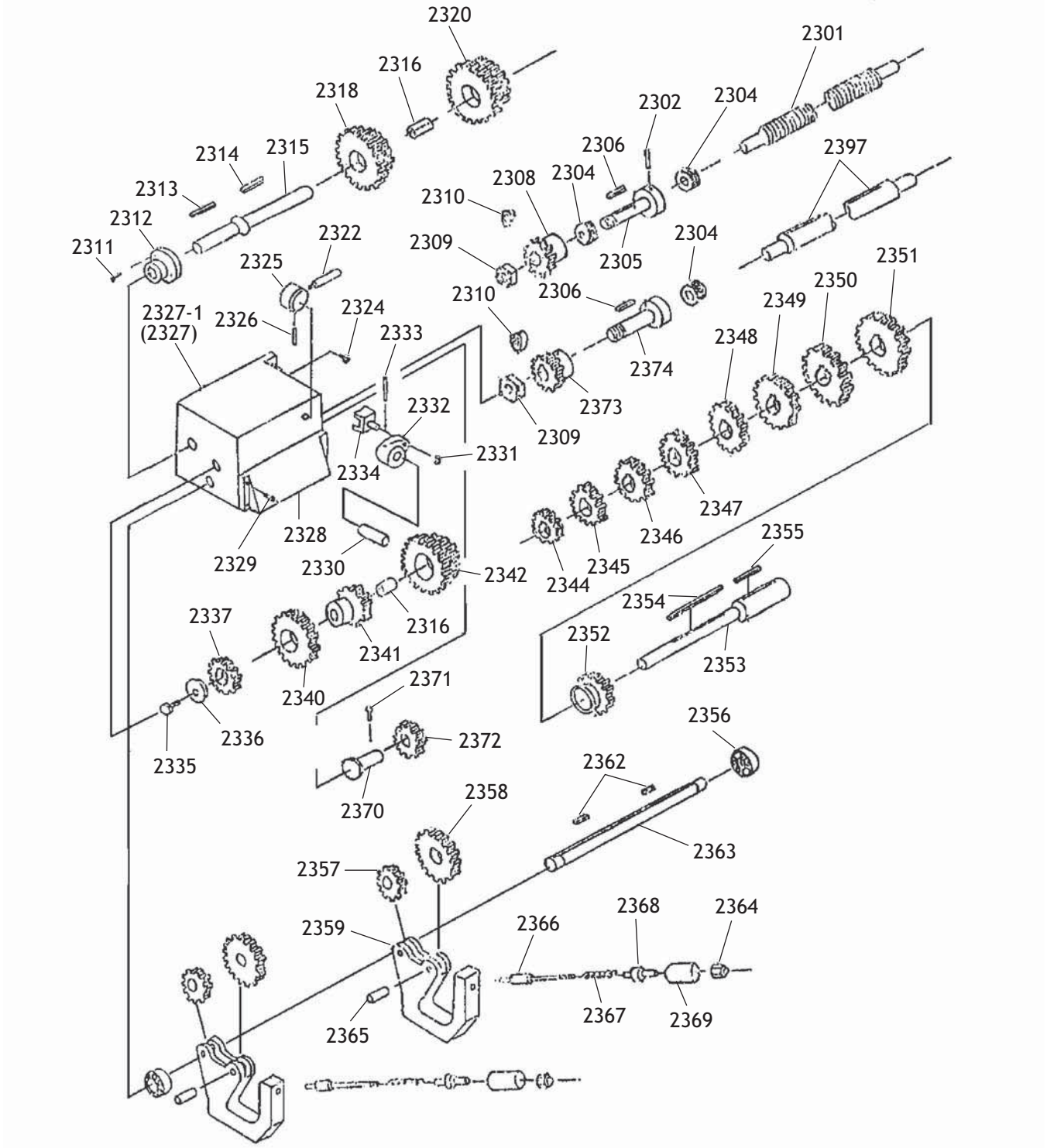
PARTS

Headstock Gearing and Control Panel Parts

REF	PART #	DESCRIPTION
1101	XPR56M	EXT RETAINING RING 45MM
1102	XM11121102	GEAR 36T
1103	XM11121103	GEAR 55T
1104	XPK14M	KEY 5 X 5 X 18
1105	XM11121105	GEAR
1106	XPR30M	EXT RETAINING RING 36MM
1107	XM11121107	GEAR 45T
1108	XM11121108	GEAR 58T
1109	XM11121109	GEAR 21T
1110	XM11121110	GEAR 45T
1111	XPR82M	EXT RETAINING RING 58MM
1112	XM11121112	GEAR 59T
1113	XM11121113	GEAR 46T
1114	XPSB27M	CAP SCREW M6-1 X 14
1115	XM11121115	COVER
1116	XM11121116	GASKET
1117	XP6004	BALL BEARING 6004ZZ
1118	XPSB35M	CAP SCREW M8-1.25 X 6
1119	XM11121119	GEAR 83T
1120	XPORP018	O-RING 17.8 X 2.4 P18
1121	XM11121121	SHAFT
1122	XPR25M	INT RETAINING RING 47MM
1123	XM11121123	GEAR 40/45T
1124	XP6004	BALL BEARING 6004ZZ
1125	XPR09M	EXT RETAINING RING 20MM
1126	XM11121126	COLLAR
1127	XM11121127	COLLAR
1128	XM11121128	GEAR 45/40T
1129	XPW03M	FLAT WASHER 6MM
1130	XPSB01M	CAP SCREW M6-1 X 16
1131	XM11121131	SHAFT
1132	XP6004	BALL BEARING 6004ZZ
1133	XM11121133	GASKET
1134	XM11121134	COVER
1135	XPSB27M	CAP SCREW M6-1 X 14
1136	XM11121136	COMPRESSION SPRING
1137	XPSB84M	CAP SCREW M10-1.5 X 35
1138	XM11121138	CAM LOCK
1139	XPK152M	KEY 8 X 8 X 80
1140	XPK43M	KEY 8 X 8 X 45

REF	PART #	DESCRIPTION
1141	XPSB80M	CAP SCREW M3-.5 X 8
1142	XM11121142	SPINDLE
1143	XM11121143	KEY 8 X 8 X 210
1144	XPSB02M	CAP SCREW M6-1 X 20
1145	XM11121145	COVER
1146	XM11121146	GASKET
1147	XM11121147	TAPER ROLLER BEARING D7212
1148	XM11121148	HEADSTOCK
1149	XM11121149	GASKET
1150	XM11121150	COVER
1151	XPR24M	INT RETAINING RING 42MM
1152	XM11121152	SHAFT
1153	XM11121153	OIL SEAL
1154	XM11121154	GEAR
1155	XM11121155	TAPER ROLLER BEARING E7211
1156	XM11121156	THREADED COLLAR
1157	XPK94M	KEY 5 X 5 X 8
1158	XM11121158	GASKET
1159	XPK94M	KEY 5 X 5 X 8
1160	XM11121160	COVER
1161	XPSB58M	CAP SCREW M8-1.25 X 12
1162	XM11121162	OIL SEAL
1163	XM11121163	PULLEY
1164	XPW03M	FLAT WASHER 6MM
1165	XM11121165	COVER
1166	XM11121166	GASKET
1167	XM11121167	SPECIAL WASHER
1168	XPK12M	KEY 5 X 5 X 30
1169	XPK17M	KEY 5 X 5 X 80
1170	XM11121170	SHAFT
1171	XM11121171	GEAR 42T
1172	XM11121172	GEAR 23T
1173	XM11121173	GEAR 47T
1174	XPN02M	HEX NUT M10-1.5
1175	XM11121175	EMERGENCY STOP SWITCH
1176	XM11121176	POWER ON BUTTON
1177	XM11121177	PUMP SWITCH
1178	XM11121178	INCHING/JOG BUTTON
1179	XM11121179	POWER LAMP

Quick Change Gearbox

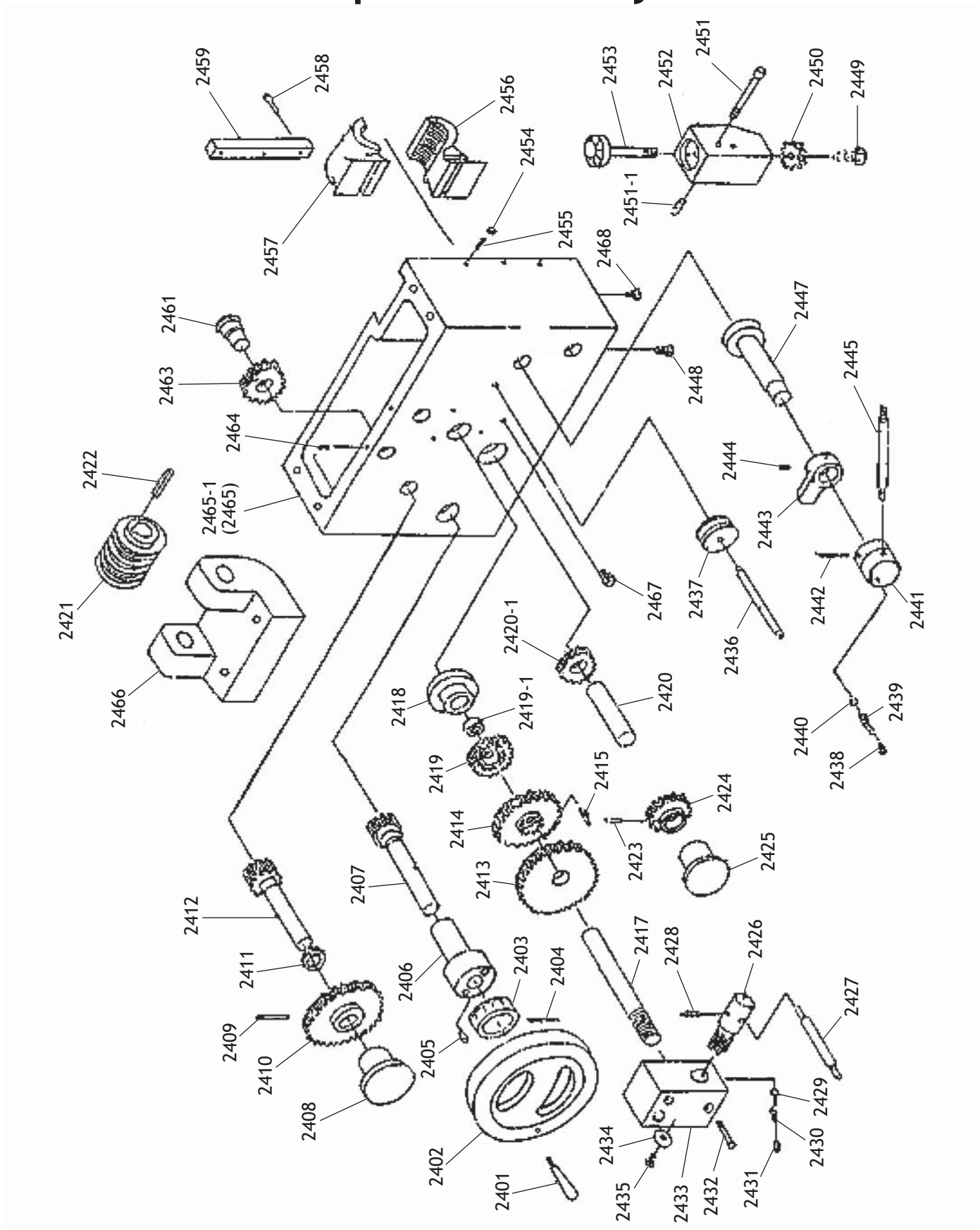


Quick Change Gearbox Parts

REF	PART #	DESCRIPTION
2301	XM11122301	LEAD SCREW
2302	XPRP10M	ROLL PIN 5 X 36
2304	XP8103	THRUST BEARING 8103
2305	XM11122305	SHAFT
2306	XPK19M	KEY 5 X 5 X 14
2308	XM11122308	GEAR
2309	XPN09M	HEX NUT M12-1.75
2310	XM11122310	SPECIAL WASHER
2311	XPSB01M	CAP SCREW M6-1 X 16
2312	XM11122312	COVER
2313	XPK12M	KEY 5 X 5 X 30
2314	XPK06M	KEY 5 X 5 X 10
2315	XM11122315	SHAFT
2316	XM11122316	BUSHING
2318	XM11122318	GEAR 32/16T
2320	XM11122320	GEAR 32/16T
2322	XM11122322	LEVER
2324	XPB01M	HEX BOLT M10-1.5 X 30
2325	XM11122325	BOSS
2326	XPRP28M	ROLL PIN 5 X 40
2327	XM11122327	COMPLETE GEARBOX ASSEMBLY
2327-1	XM11122327-1	GEARBOX
2328	XM11122328	PLATE
2329	XPSB01M	CAP SCREW M6-1 X 16
2330	XM11122330	SHAFT
2331	XPEC04M	E-CLIP 13MM
2332	XM11122332	SHIFT PIVOT
2333	XPRP73M	ROLL PIN 4 X 30
2334	XM11122334	SHIFT FORK
2335	XPSB26M	CAP SCREW M6-1 X 12
2336	XM11122336	SPECIAL WASHER
2337	XM11122337	GEAR 16T
2340	XM11122340	GEAR 32T

REF	PART #	DESCRIPTION
2341	XM11122341	GEAR 16T
2342	XM11122342	GEAR 32T
2344	XM11122344	GEAR 16T
2345	XM11122345	GEAR 18T
2346	XM11122346	GEAR 19T
2347	XM11122347	GEAR 20T
2348	XM11122348	GEAR 22T
2349	XM11122349	GEAR 24T
2350	XM11122350	GEAR 26T
2351	XM11122351	GEAR 28T
2352	XM11122352	GEAR 24T
2353	XM11122353	SHAFT
2354	XPK120M	KEY 5 X 5 X 75
2355	XPK02M	KEY 5 X 5 X 40
2356	XM11122356	ANG CONTACT BEARING 7000
2357	XM11122357	GEAR 16T
2358	XM11122358	GEAR 32T
2359	XM11122359	SHIFT LEVER
2362	XM11122362	SHIFT ROD KEY
2363	XM11122363	SHIFT ROD
2364	XPN01M	HEX NUT M6-1
2365	XM11122365	SHAFT
2366	XM11122366	SHAFT
2367	XM11122367	SPRING
2368	XM11122368	SLEEVE
2369	XM11122369	HOUSING
2370	XM11122370	SHAFT
2371	XPSS20M	SET SCREW M8-1.25 X 8
2372	XM11122372	GEAR 15T
2373	XM11122373	GEAR 24T
2374	XM11122374	SHAFT
2397	XM11122397	SHAFT

Apron Assembly

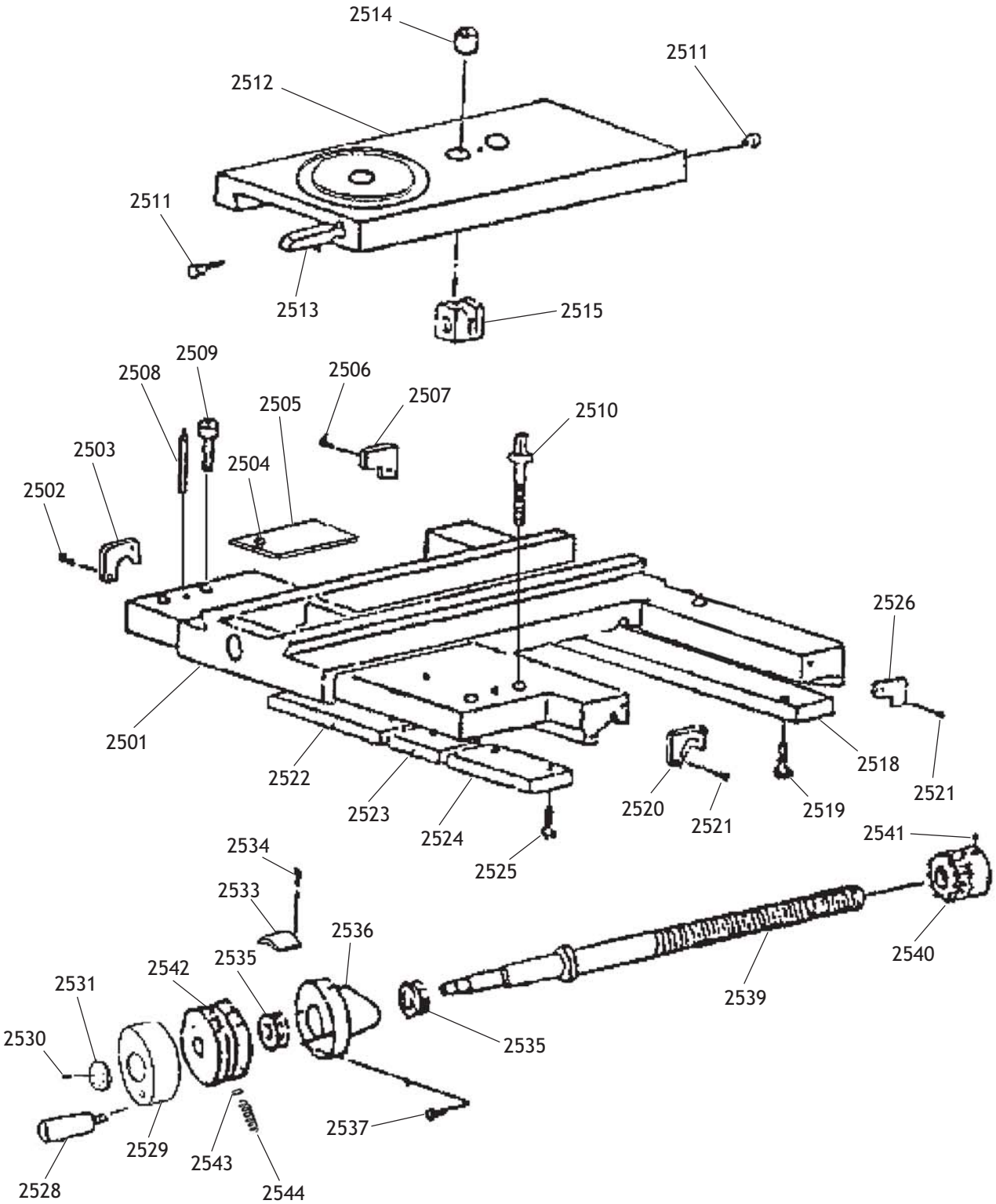


Apron Assembly Parts

REF	PART #	DESCRIPTION
2401	XM11122401	HANDLE
2402	XM11122402	HANDWHEEL
2403	XM11122403	GRADUATED DIAL
2404	XPRP28M	ROLL PIN 5 X 40
2405	XPSS25M	SET SCREW M6-1 X 20
2406	XM11122406	BRACKET
2407	XM11122407	GEAR SHAFT
2408	XM11122408	KNOB
2409	XPRP05M	ROLL PIN 5 X 30
2410	XM11122410	GEAR
2411	XPR08M	EXT RETAINING RING 19MM
2412	XM11122412	GEAR SHAFT 11T
2413	XM11122413	GEAR 48T
2414	XM11122414	GEAR 51T
2415	XPRP05M	ROLL PIN 5 X 30
2417	XM11122417	SHAFT
2418	XM11122418	BUSHING
2419	XM11122419	GEAR 25T
2419-1	XM11122419-1	SPACER
2420	XM11122420	SHAFT
2420-1	XM11122420-1	GEAR 24T
2421	XM11122421	WORM GEAR
2422	XPK33M	KEY 5 X 5 X 45
2423	XPRP06M	ROLL PIN 5 X 24
2424	XM11122424	GEAR 14T
2425	XM11122425	KNOB
2426	XM11122426	GEAR SHAFT 10T
2427	XM11122427	LEVER
2428	XPRP06M	ROLL PIN 5 X 24
2429	XM11122429	STEEL BALL 6MM
2430	XM11122430	COMPRESSION SPRING
2431	XPSS03M	SET SCREW M6-1 X 8
2432	XPSB30M	CAP SCREW M6-1 X 45
2433	XM11122433	BOSS

REF	PART #	DESCRIPTION
2434	XPW03M	FLAT WASHER 6MM
2435	XPSB29M	CAP SCREW M6-1 X 40
2436	XM11122436	SHAFT
2437	XM11122437	SAFETY SHIFTER
2438	XPSS17M	SET SCREW M8-1.25 X 6
2439	XM11122439	COMPRESSION SPRING
2440	XM11122440	STEEL BALL 6MM
2441	XM11122441	BOSS
2442	XPRP32M	ROLL PIN 6 X 40
2443	XM11122443	DOG
2444	XPSS19M	SET SCREW M8-1.25 X 30
2445	XM11122445	LEVER
2447	XM11122447	SHAFT
2448	XPSB127M	CAP SCREW M6-1X 65
2449	XPSB28M	CAP SCREW M6-1 X 15
2450	XM11122450	GEAR
2451	XPSB49M	CAP SCREW M6-1 X 60
2451-1	XM11122451-1	SPACER
2452	XM11122452	HOUSING
2453	XM11122453	THREAD DIAL
2454	XPN01M	HEX NUT M6-1
2455	XPSS11M	SET SCREW M6-1 X 16
2456	XM11122456	HALF NUT
2457	XM11122457	HALF NUT HOUSING
2458	XPSS12M	SET SCREW M6-1 X 25
2459	XM11122459	GIB
2461	XM11122461	SHAFT
2463	XM11122463	GEAR 25T
2464	XPSS02M	SET SCREW M6-1 X 6
2465	XM11122465	COMPLETE APRON ASSEMBLY
2465-1	XM11122465-1	APRON CASE
2466	XM11122466	WORM BRACKET
2467	XM11122467	LIMIT BLOCK
2468	XPSB61M	CAP SCREW M10-1.5 X 20

Saddle and Cross Feed

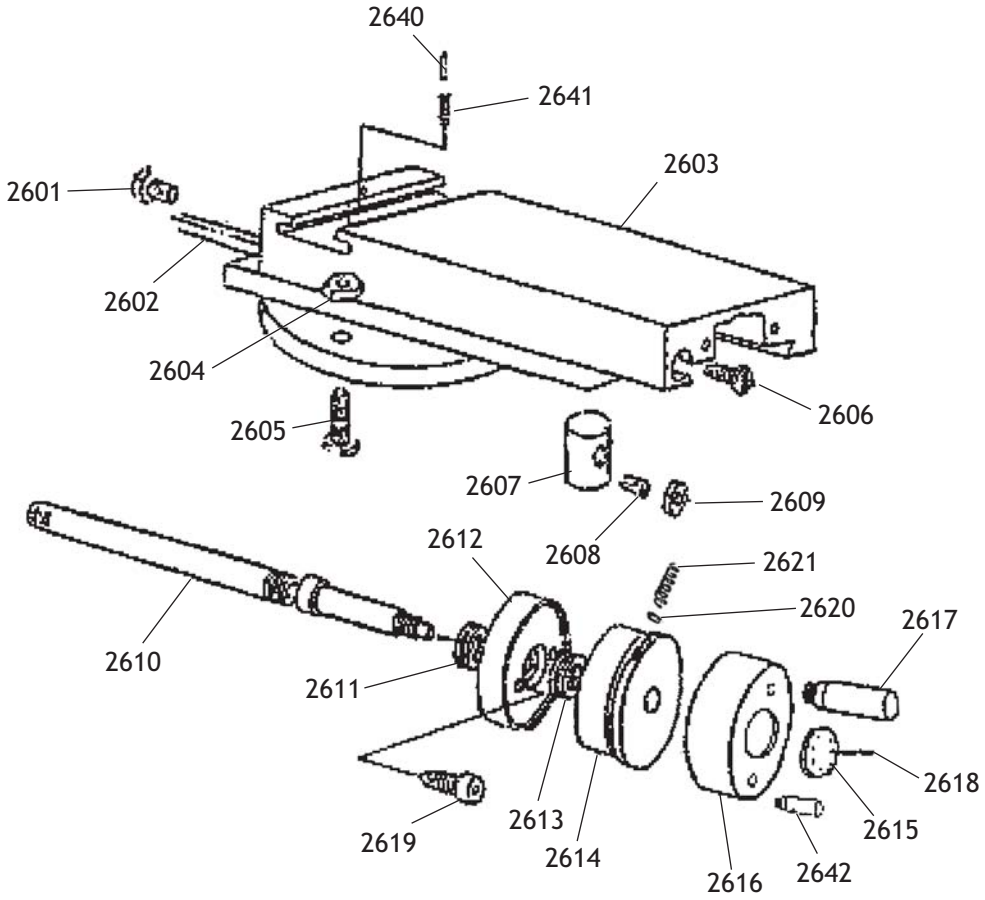


Saddle and Cross Feed Parts

REF	PART #	DESCRIPTION
2501	XM11122501	SADDLE
2502	XPS59M	PHLP HD SCR M3-.5 X 14
2503	XM11122503	WIPER
2504	XPS24	PHLP HD SCR 8-32 x 3/8
2505	XM11122505	COVER
2506	XPS57M	PHLP HD SCR M5-.8 X 14
2507	XM11122507	WIPER
2508	XPRP29M	ROLL PIN 5 X 45
2509	XPSB40M	CAP SCREW M8-1.25 X 35
2510	XM11122510	SADDLE SCREW
2511	XM11122511	CROSS SLIDE SCREW
2512	XM11122512	CROSS SLIDE
2513	XM11122513	GIB
2514	XM11122514	BUSHING
2515	XM11122515	BRASS CROSS SLIDE NUT M8 X 12
2518	XM11122518	SLIDE PLATE
2519	XPFH21M	FLAT HD SCR M8-1.25 X 25
2520	XM11122520	WIPER
2521	XPS57M	PHLP HD SCR M5-.8 X 14
2522	XM11122522	SLIDE PLATE

REF	PART #	DESCRIPTION
2523	XM11122523	SLIDE PLATE
2524	XM11122524	SLIDE PLATE
2525	XPB19M	HEX BOLT M8-1.25 X 24
2526	XM11122526	WIPER
2528	XM11122528	HANDLE
2529	XM11122529	HUB
2530	XM11122530	HUB SCREW
2531	XM11122531	SPANNER NUT
2533	XM11122533	INDICATOR PLATE
2534	XM11122534	INDICATOR PLATE SCREW
2535	XP8102	THRUST BEARING 8102
2536	XM11122536	BRACKET
2537	XPSB06M	CAP SCREW M6-1 X 25
2539	XM11122539	LEAD SCREW
2540	XM11122540	GEAR 13T
2541	XPSS20M	SET SCREW M8-1.25 X 8
2542	XM11122542	SCALE HUB
2543	XPSTB003M	STEEL BALL 6MM
2544	XM11122544	COMPRESSION SPRING 6 X 16MM

Compound Rest

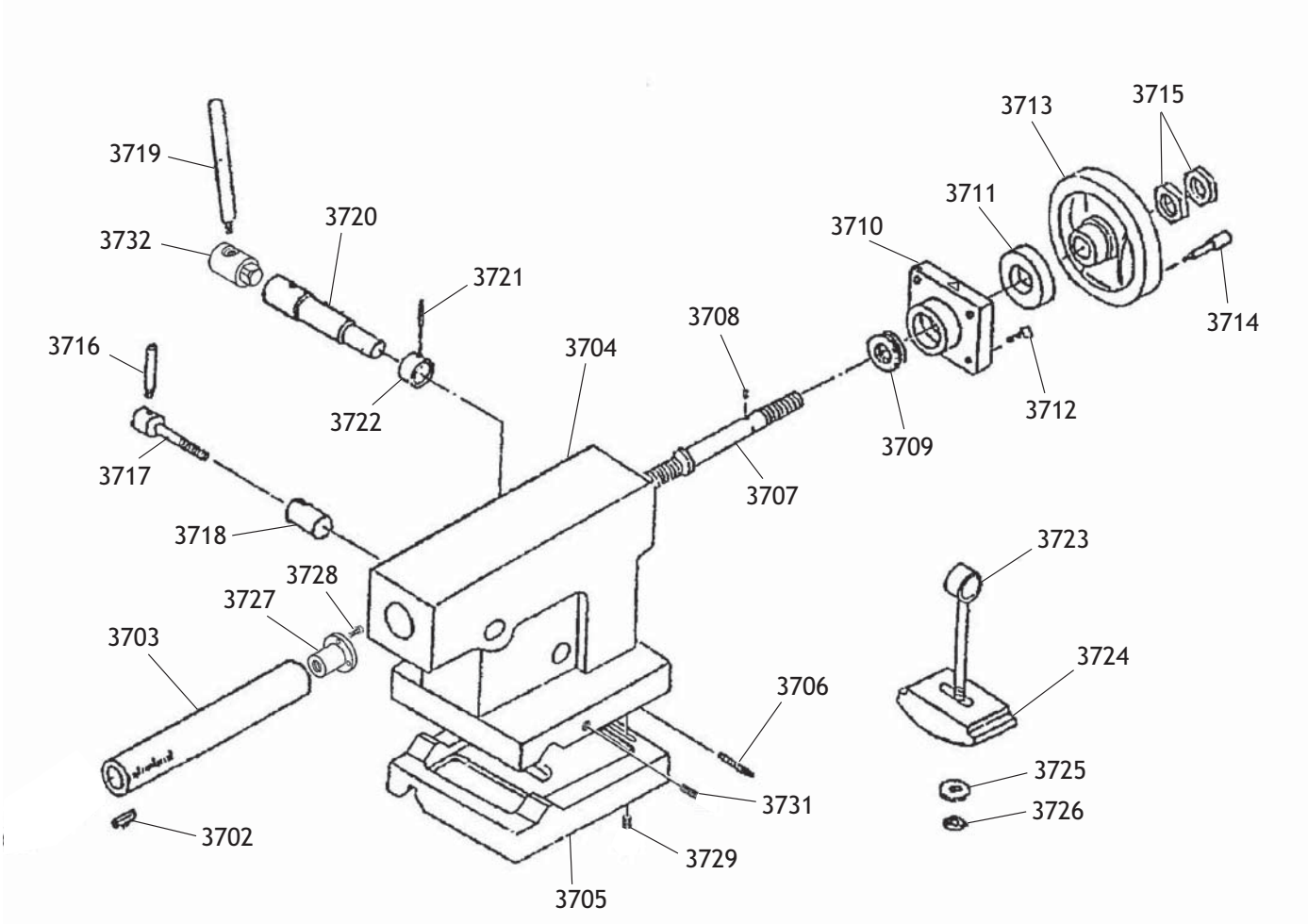


Compound Rest Parts

REF	PART #	DESCRIPTION
2601	XM11122601	GIB SCREW
2602	XM11122602	GIB
2603	XM11122603	COMPOUND SLIDE
2604	XPN02M	HEX NUT M10-1.5
2605	XM11122605	COMPOUND SLIDE SCREW
2606	XM11122606	COMPOUND SLIDE SCREW
2607	XM11122607	LEAD SCREW NUT
2608	XPSS03M	SET SCREW M6-1 X 8
2609	XPN01M	HEX NUT M6-1
2610	XM11122610	LEAD SCREW
2611	XP8101	THRUST BEARING 8101
2612	XM11122612	BRACKET

REF	PART #	DESCRIPTION
2613	XP8101	THRUST BEARING 8101
2614	XM11122614	GRADUATED DIAL
2615	XM11122615	SPANNER NUT
2616	XM11122616	BRACKET
2617	XM11122617	HANDLE LARGE
2618	XPSS07M	SET SCREW M5-.8 X 5
2619	XPSB28M	CAP SCREW M6-1 X 15
2620	XPSTB003M	STEEL BALL 6MM
2621	XM11122544	COMPRESSION SPRING 6 X 16MM
2640	XM11122640	PIN
2641	XM11122641	COMPOUND SLIDE SCREW
2642	XM11122642	HANDLE SMALL

Tailstock Assembly

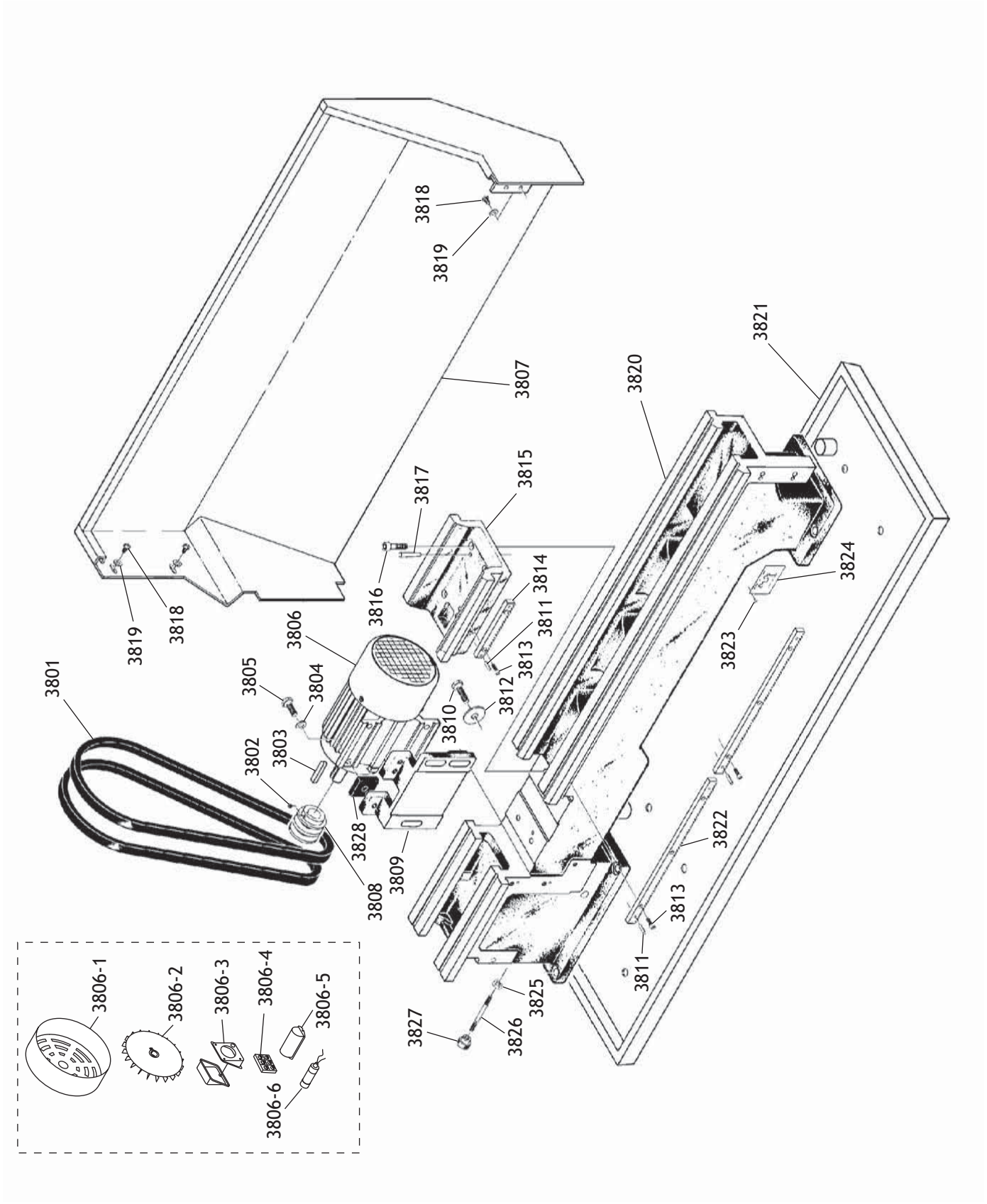


Tailstock Parts

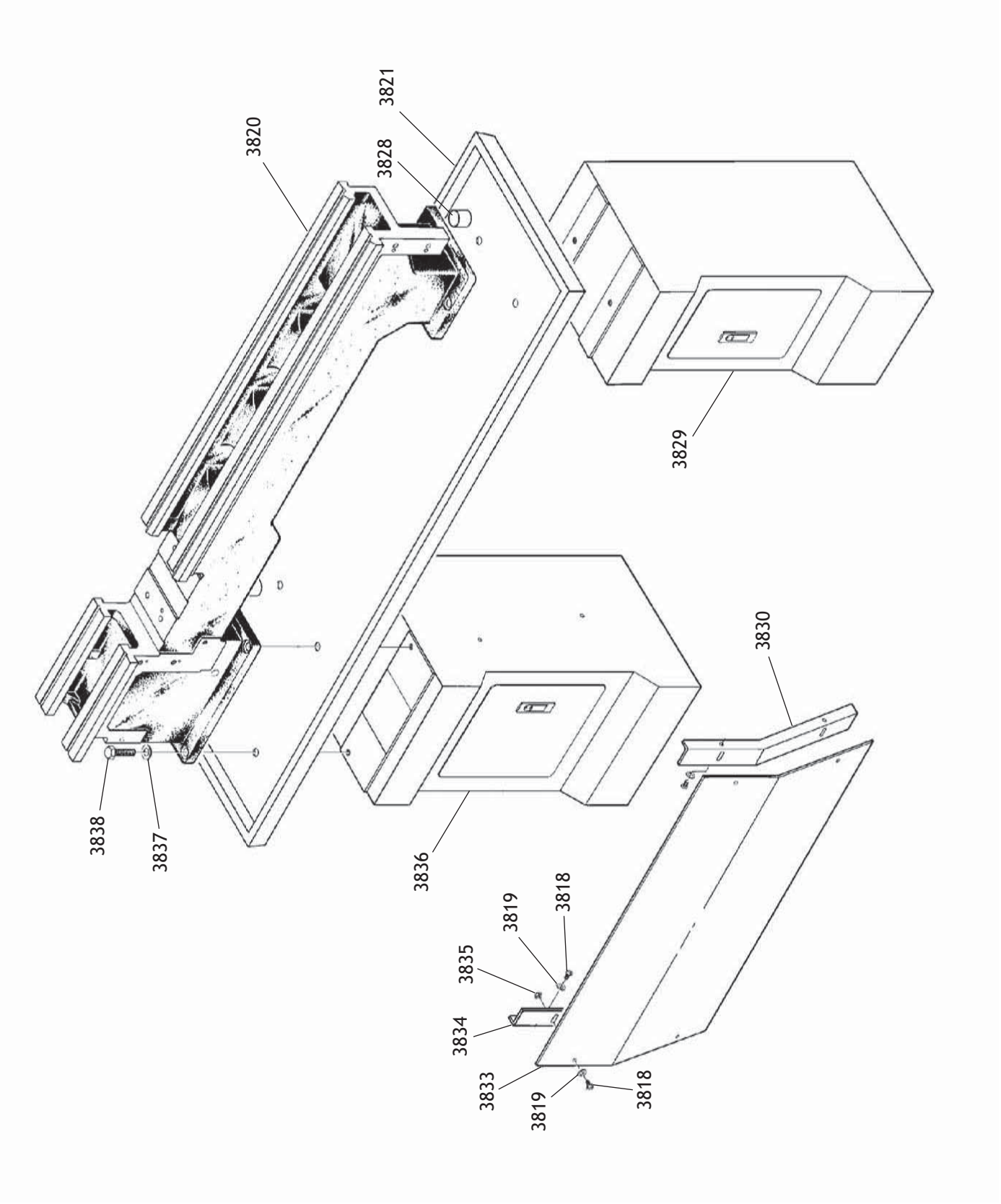
REF	PART #	DESCRIPTION
3702	XPK136M	KEY 8 X 8 X 30
3703	XM11123703	QUILL
3704	XM11123704	TAILSTOCK
3705	XM11123705	BASE
3706	XPSS39M	SET SCREW M10-1.5 X 50
3707	XM11123707	SPECIAL SCREW
3708	XM11123708	PIN
3709	XM11123709	BALL BEARING 8101
3710	XM11123710	BRACKET
3711	XM11123711	GRADUATED DIAL
3712	XPSB02M	CAP SCREW M6-1 X 20
3713	XM11123713	HANDWHEEL
3714	XM11123714	HANDLE
3715	XPN09M	HEX NUT M12-1.75
3716	XM11123716	HANDLE

REF	PART #	DESCRIPTION
3717	XM11123717	LOCK SCREW
3718	XM11123718	LOCK SHAFT
3719	XM11123719	HANDLE
3720	XM11123720	SHAFT
3721	XPRP05M	ROLL PIN 5 X 30
3722	XM11123722	COLLAR
3723	XM11123723	SHAFT
3724	XM11123724	BASE SHOE BLOCK
3725	XPW06M	FLAT WASHER 12MM
3726	XPN09M	HEX NUT M12-1.75
3727	XM11123727	SPECIAL NUT
3728	XPSB17M	CAP SCREW M4-.7 X 10
3729	XPSS28M	SET SCREW M6-1 X 30
3731	XPSS42M	SET SCREW M8-1.25 X 50
3732	XM11123732	HANDLE BASE

Bed and Motor Parts



Cabinet Parts

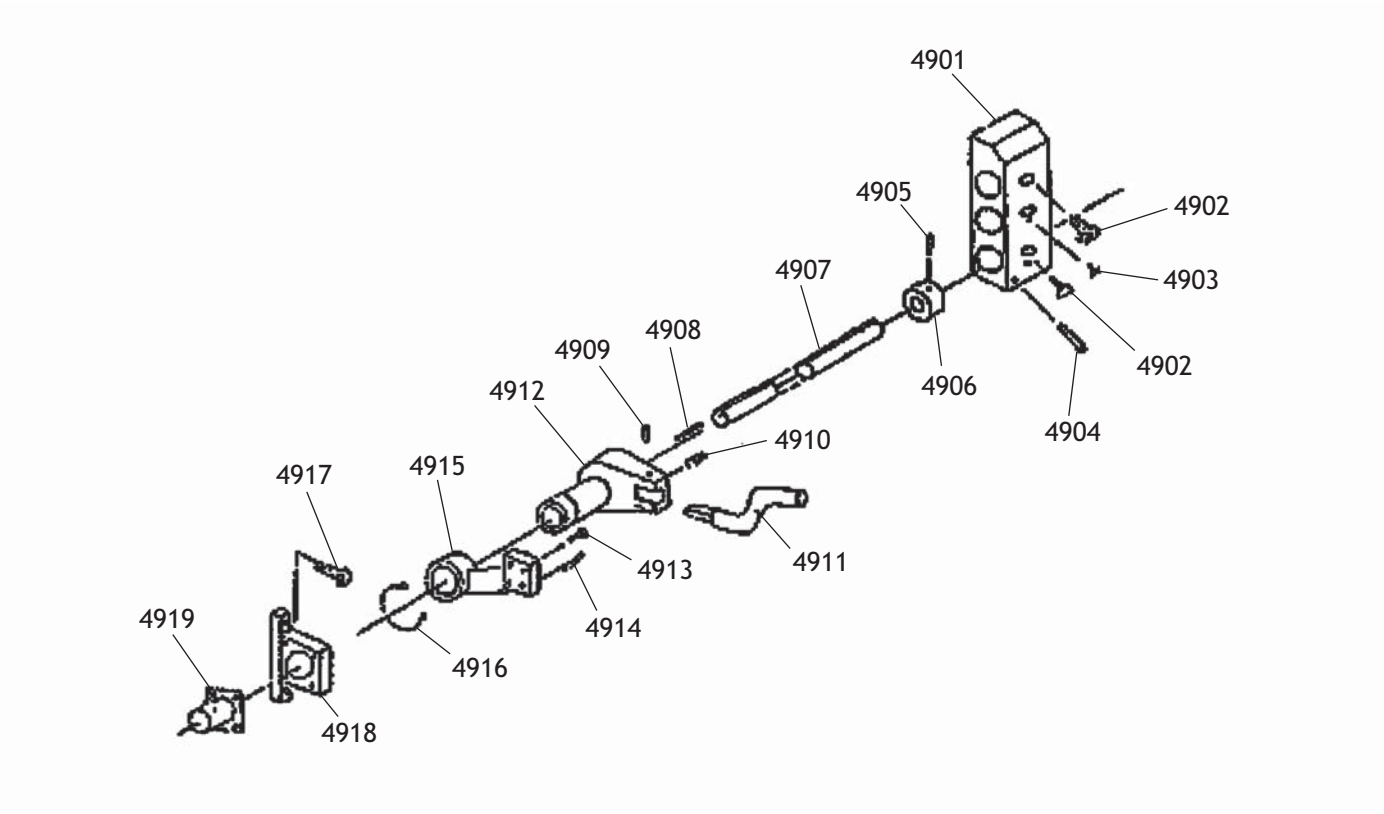


Bed, Motor, and Cabinet Parts

REF	PART #	DESCRIPTION
3801	XPVA32	V-BELT A-32 4L320
3802	XPSS05M	SET SCREW M5-.8 X 10
3803	XM11123803	HEAD KEY
3804	XPW04M	FLAT WASHER 10MM
3805	XPB32M	HEX BOLT M10-1.5 X 25
3806	XM11123806	MOTOR 2HP/220V/1-PH
3806-1	XM11123806-1	MOTOR FAN COVER
3806-2	XM11123806-2	MOTOR FAN
3806-3	XM11123806-3	MOTOR JUNCTION BOX
3806-4	XM11123806-4	MOTOR TERMINAL BLOCK
3806-5	XM11123806-5	MOTOR CAPACITOR COVER
3806-6	XM11123806-6	CAPACITOR 150MFD/250VAC
3807	XM11123807	SPLASH GUARD
3808	XM11123808	PULLEY
3809	XM11123809	BRACKET
3810	XPB01M	HEX BOLT M10-2.5 X 30
3811	XPRP49M	ROLL PIN 5 X 25
3812	XPW04M	FLAT WASHER 10MM
3813	XPSB06M	CAP SCREW M6-1 X 25
3814	XM11123814	RACK GEAR
3815	XM11123815	GAP PIECE

REF	PART #	DESCRIPTION
3816	XPSB70M	CAP SCREW M10-1.5 X 45
3817	XM11123817	THREADED TAPER PIN
3818	XPS68M	PHLP HD SCR M6-1 X 10
3819	XPW03M	FLAT WASHER 6MM
3820	XM11123820	LATHE BED
3821	XM11123821	CHIP PAN
3822	XM11123822	RACK GEAR
3823	XM11123823	RIVET 2 X 5
3824	XM11123824	INFORMATION PLATE
3825	XPN02M	HEX NUT M10-1.5
3826	XM11123826	SPECIAL STUD
3827	XM11123827	SPECIAL NUT
3828	XM11123828	SPACER BLOCK
3829	XM11123829	RIGHT STAND BASE
3830	XM11123830	RIGHT BRACKET
3833	XM11123833	FRONT PLATE
3834	XM11123834	LEFT BRACKET
3835	XPN01M	HEX NUT M6-1
3836	XM11123836	LEFT STAND BASE
3837	XPW10M	FLAT WASHER 14MM
3838	XPB129M	HEX BOLT M14-2 X 45

Spindle Switch Control Rod Assembly

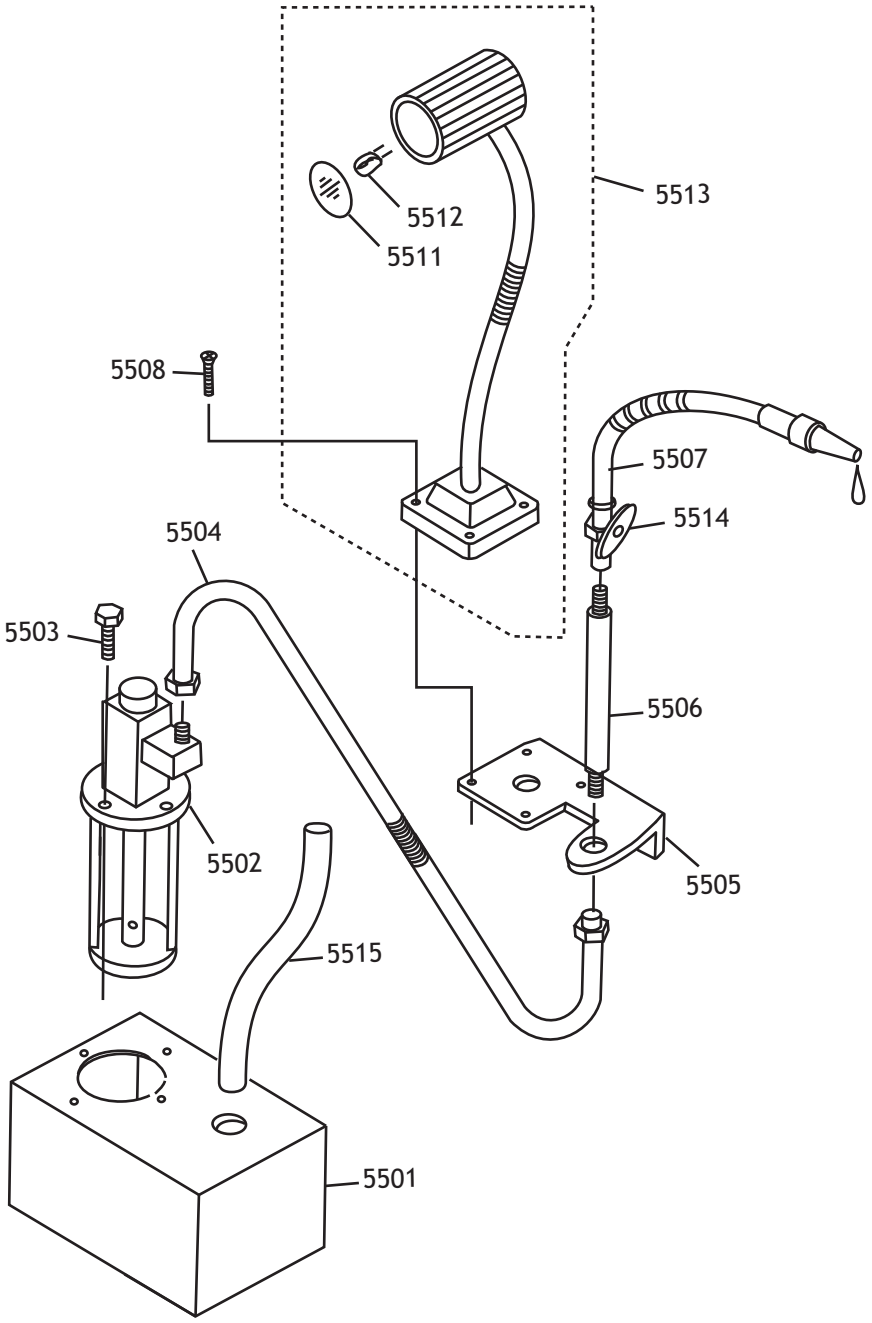


Spindle Switch Control Rod Assembly

REF	PART #	DESCRIPTION
4901	XM11124901	BRACKET
4902	XPSB25M	CAP SCREW M6-1 X 11
4903	XM11124903	OIL CAP
4904	XPRP34M	ROLL PIN 6 X 55
4905	XPSS02M	SET SCREW M6-1 X 6
4906	XM11124906	COLLAR
4907	XM11124907	FEED ROD
4908	XM11124908	KEY
4909	XPRP39M	ROLL PIN 4 X 20
4910	XM11124910	SPRING 7020

REF	PART #	DESCRIPTION
4911	XM11124911	HANDLE
4912	XM11124912	BRACKET
4913	XPSB27M	CAP SCREW M6-1 X 14
4914	XPRP49M	ROLL PIN 5 X 25
4915	XM11124915	BRACKET
4916	XPR15M	EXT RETAINING RING 30MM
4917	XPSB31M	CAP SCREW M8-1.25 X 25
4918	XM11124918	BRACKET
4919	XM11124919	SWITCH

Coolant System and Lamp

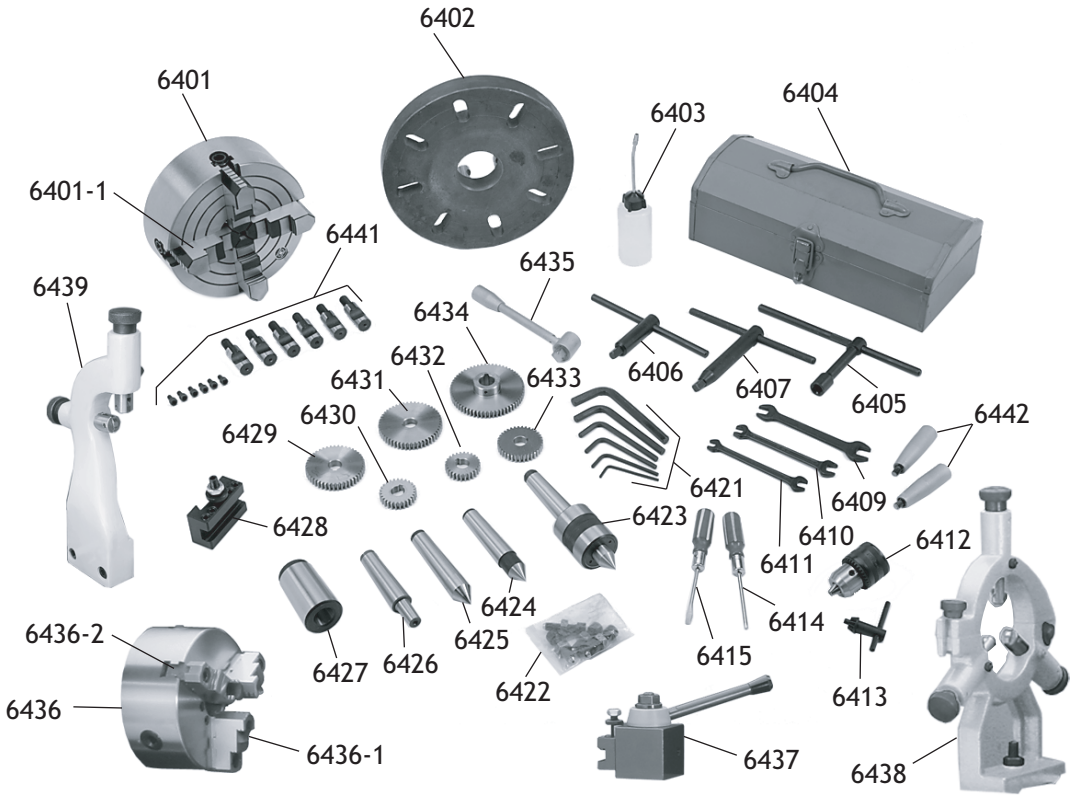


Coolant System and Lamp Parts

REF	PART #	DESCRIPTION
5501	XM11125501	COOLANT TANK
5502	XM11125502	COOLANT PUMP ASSEMBLY
5503	XPB94M	HEX BOLT M5-.8 X 25
5504	XM11125504	FLEX TUBE
5505	XM11125505	MOUNTING PEDESTAL
5506	XM11125506	COOLANT STANDPIPE
5507	XM11125507	NOZZLE ASSEMBLY

REF	PART #	DESCRIPTION
5508	XPS11M	PHLP HD SCR M6-1 X 16
5511	XM11125511	LENS
5512	XM11125512	BULB, 50 W, 24VAC
5513	XM11125513	COMPLETE LAMP ASSEMBLY
5514	XM11125514	FLOW VALVE
5515	XM11125515	RUBBER DRAIN TUBE

Lathe Accessories

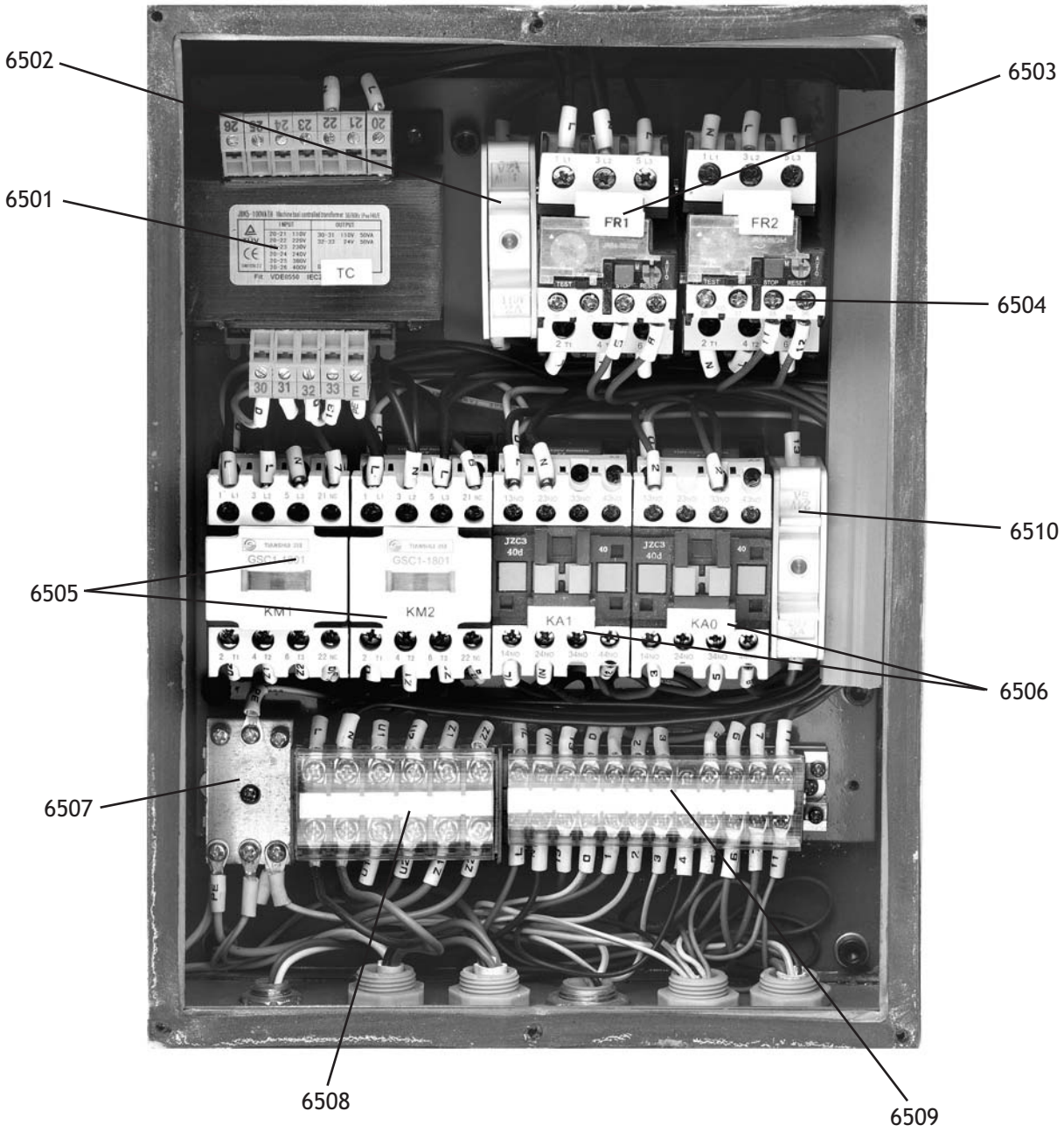


Lathe Accessories Parts

REF	PART #	DESCRIPTION
6401	XM11126401	4-JAW UNIVERSAL CHUCK 8"
6401-1	XM11126401-1	4-JAW CHUCK, JAW
6402	XM11126402	FACEPLATE 10"
6403	XM11126403	OIL BOTTLE
6404	XM11126404	TOOL BOX
6405	XM11126405	SQUARE SOCKET T-WRENCH
6406	XM11126406	4-JAW CHUCK WRENCH
6407	XM11126407	3-JAW CHUCK WRENCH
6409	XPWR1214	COMBO WRENCH 12/14MM
6410	XPWR1012	COMBO WRENCH 10/12MM
6411	XM11126411	COMBO WRENCH 9/11MM
6412	XM11126412	DRILL CHUCK B16 1.5-13MM
6413	XM11126413	DRILL CHUCK KEY
6414	XM11126414	PHILLIPS HD SCREWDRIVER #2
6415	XM11126415	STANDARD SCREWDRIVER
6421	XM11126421	HEX WRENCH SET 2-10MM
6422	XM11126422	SPIDER SCREW SET
6423	XM11126423	LIVE CENTER MT#3
6424	XM11126424	CARBIDE TIP DEAD CENTER MT#3

REF	PART #	DESCRIPTION
6425	XM11126425	STANDARD DEAD CENTER MT#3
6426	XM11126426	ARBOR B16-MT#3
6427	XM11126427	DEAD CENTER SPINDLE SLEEVE
6428	XM11126428	QUICK CHANGE TOOL HOLDER
6429	XM11126429	GEAR 45T
6430	XM11126430	GEAR 27T
6431	XM11126431	GEAR 50T
6432	XM11126432	GEAR 26T
6433	XM11126433	GEAR 35T
6434	XM11126434	GEAR 60T
6435	XM11126435	TAILSTOCK WRENCH
6436	XM11126436	3-JAW CHUCK
6436-1	XM11126436-1	3-JAW CHUCK TOP JAW SET
6436-2	XM11126436-2	3-JAW CHUCK BOTTOM JAW SET
6437	XM11126437	QUICK CHANGE TOOL POST
6438	XM11126438	STEADY REST
6439	XM11126439	FOLLOW REST
6441	XM11126441	CAM LOCK AND CAP SCREW SET
6442	XM11126442	HANDLE

Main Electrical Box

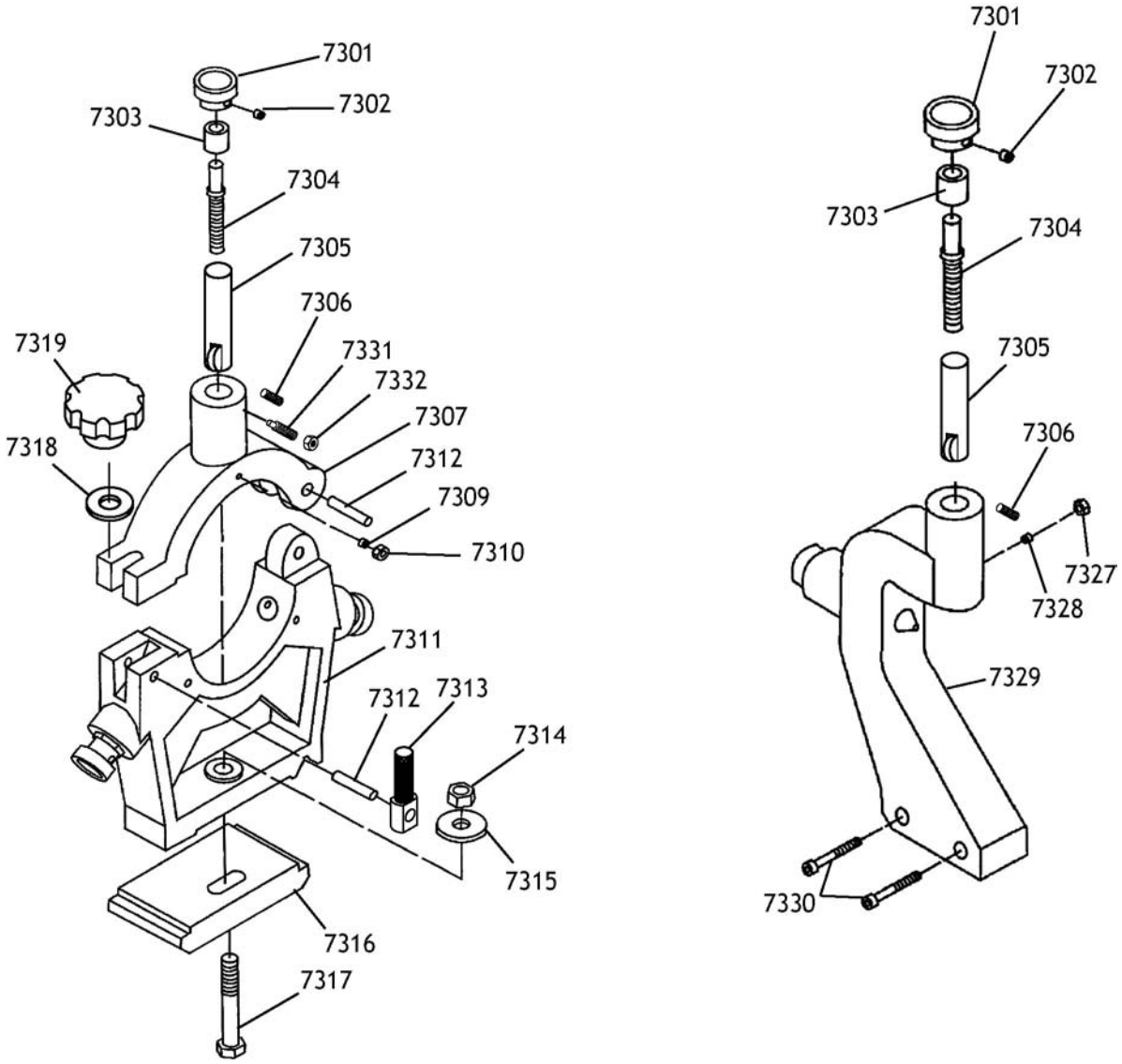


Main Electrical Box Parts

REF	PART #	DESCRIPTION
6501	XM11126501	TRANSFORMER, JBK5-100VATH
6502	XM11126502	FUSE HOLDER 2A,110V
6503	XM11126503	THERMAL RELAY: JRS4-09/25D, 6-13A, SET @ 11A
6504	XM11126504	THERMAL RELAY: JRS4-09/25D, 0.4-0.63A, SET @ 0.5A
6505	XM11126505	CONTACTOR: TIANSHUI, 110V, GSC1-1801

REF	PART #	DESCRIPTION
6506	XM11126506	CONTACTOR: 110V COIL, JZC3 40D
6507	XM11126507	GROUND TERMINAL BLOCK
6508	XM11126508	TERMINAL BLOCK 12-POLE
6509	XM11126509	TERMINAL BLOCK 20-POLE
6510	XM11126510	FUSE HOLDER 5A, 24V

Follow Rest and Steady Rest



Follow Rest and Steady Rest Parts

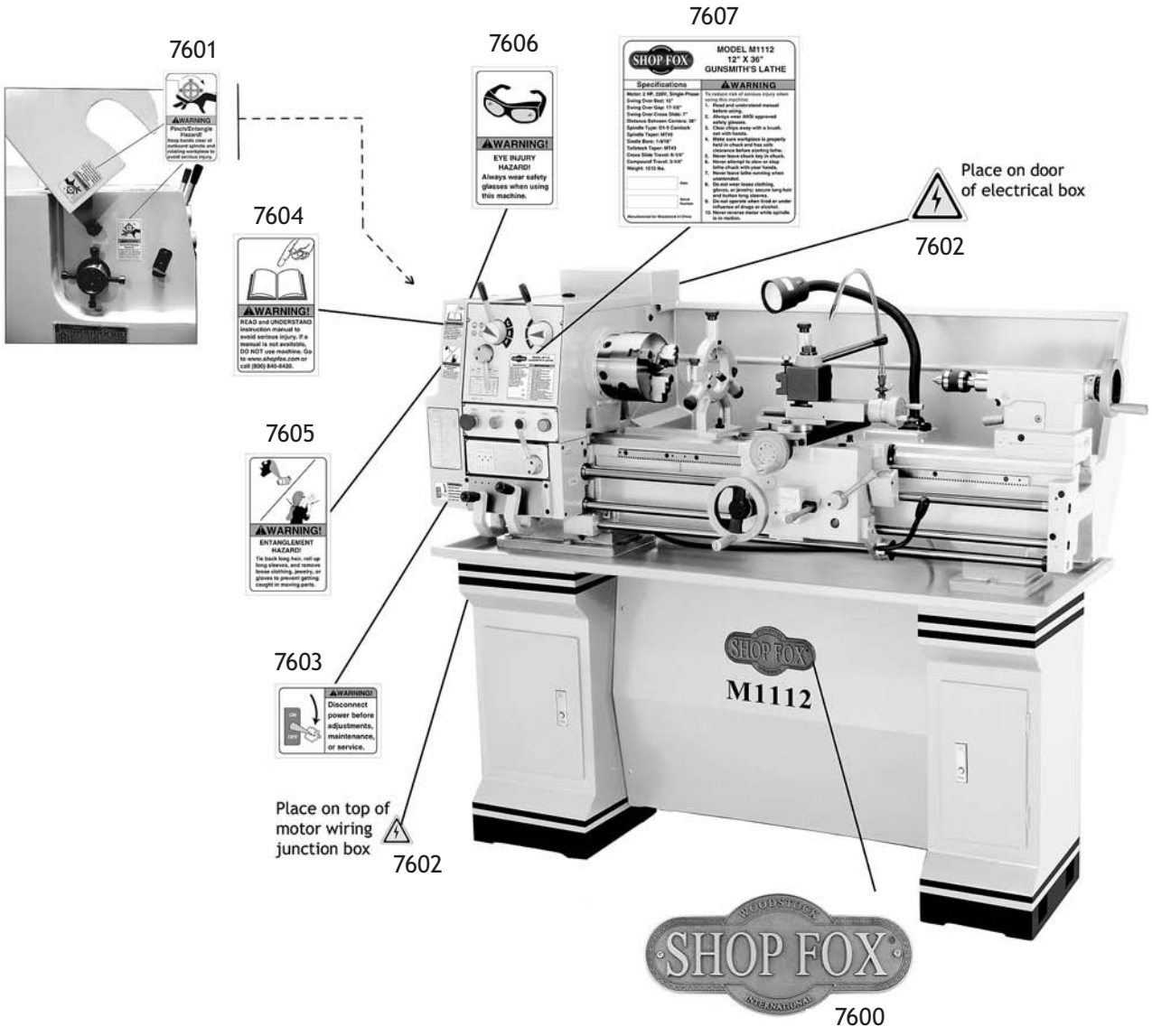
REF	PART #	DESCRIPTION
7301	XM11127301	KNURLED KNOB
7302	XPSS02M	SET SCREW M6-1 X 6
7303	XM11127303	BUSHING
7304	XM11127304	SPECIAL SCREW
7305	XM11127305	FINGER W/BEARING
7306	XPSS03M	SET SCREW M6-1 X 8
7307	XM11127307	UPPER STEADY REST CASTING
7309	XPSS25M	SET SCREW M6-1 X 20
7310	XPN01M	HEX NUT M6-1
7311	XM11127311	LOWER STEADY REST CASTING
7312	XM11127312	PIN
7313	XM11127313	LOCK BOLT M8-1.25

REF	PART #	DESCRIPTION
7314	XPN09M	HEX NUT M12-1.75
7315	XPW06M	FLAT WASHER 12MM
7316	XM11127316	CLAMP PLATE
7317	XPB43M	HEX BOLT M12-1.75 X 75
7318	XPW01M	FLAT WASHER 8MM
7319	XM11127319	LOCK KNOB M8-1.25
7327	XPN01M	HEX NUT M6-1
7328	XPSS25M	SET SCREW M6-1 X 20
7329	XM11127329	FOLLOW REST CASTING
7330	XPSB35M	CAP SCREW M8-1.25 x 60
7331	XPSS25M	SET SCREW M6-1 X 20
7332	XPN01M	HEX NUT M6-1

Label Placement

⚠WARNING

Safety labels warn about machine hazards and how to prevent machine damage or injury. The owner of this machine MUST maintain the original location and readability of all labels on this machine. If any label is removed or becomes unreadable, REPLACE that label before allowing the machine to enter service again. Contact Woodstock International, Inc. at (360) 734-3482 or www.shopfoxtools.com to order new labels.



Label Parts

REF	PART #	DESCRIPTION
7600	D3376	SHOP FOX LOGO PLATE
7601	XM11127601	SPIDER ENTANGLEMENT LABEL
7602	XPLABEL-14	ELECTRICITY LABEL
7603	XM11127603	DISCONNECT LABEL

REF	PART #	DESCRIPTION
7604	XPLABEL-12	READ MANUAL LABEL
7605	XM11127605	ENTANGLEMENT HAZARD LABEL
7606	XPLABEL-11	SAFETY GLASSES LABEL
7607	XM11127607	MACHINE ID LABEL

Warranty Registration

Name_____

Street _____

City _____ State_____ Zip_____

Phone #_____ Email_____ Invoice #_____

Model #_____ Serial #_____ Dealer Name_____ Purchase Date_____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

_____ Advertisement _____ Friend ____ Local Store
_____ Mail Order Catalog _____ Website ____ Other:

2. How long have you been a woodworker/metalworker?

_____ 0-2 Years _____ 2-8 Years ____ 8-20 Years _____ 20+ Years

3. How many of your machines or tools are **Shop Fox®**?

_____ 0-2 _____ 3-5 ____ 6-9 _____ 10+

4. Do you think your machine represents a good value? _____ Yes ____ No

5. Would you recommend **Shop Fox®** products to a friend? _____ Yes ____ No

6. What is your age group?

_____ 20-29 _____ 30-39 ____ 40-49
_____ 50-59 _____ 60-69 ____ 70+

7. What is your annual household income?

_____ $20,000-$29,000 _____ $30,000-$39,000 ____ $40,000-$49,000
_____ $50,000-$59,000 _____ $60,000-$69,000 ____ $70,000+

8. Which of the following magazines do you subscribe to?

____ Cabinet Maker
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Modeltec
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Practical Homeowner
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

9. Comments:_____

_____

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FOLD ALONG DOTTED LINE

Place
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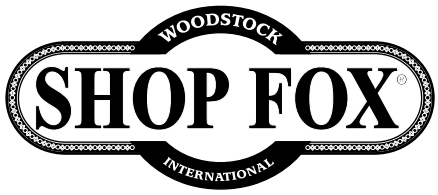

WOODSTOCK INTERNATIONAL INC.
P.O. BOX 2309
BELLINGHAM, WA 98227-2309

FOLD ALONG DOTTED LINE

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY

Woodstock International, Inc. warrants all Shop Fox machinery to be free of defects from workmanship and materials for a period of two years from the date of original purchase by the original owner. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, lack of maintenance, or reimbursement of third party expenses incurred.

Woodstock International, Inc. will repair or replace, at its expense and at its option, the Shop Fox machine or machine part, which in normal use has proven to be defective, provided that the original owner returns the product prepaid to a Shop Fox factory service center with proof of their purchase of the product within two years, and provides Woodstock International, Inc. reasonable opportunity to verify the alleged defect through inspection. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Woodstock International Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Woodstock International, Inc.'s sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant that Shop Fox machinery complies with the provisions of any law or acts. In no event shall Woodstock International, Inc.'s liability under this warranty exceed the purchase price paid for the product, and any legal actions brought against Woodstock International, Inc. shall be tried in the State of Washington, County of Whatcom. We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damages arising from the use of our products.

Every effort has been made to ensure that all Shop Fox machinery meets high quality and durability standards. We reserve the right to change specifications at any time because of our commitment to continuously improve the quality of our products.

High Quality Machines and Tools

Woodstock International, Inc. carries thousands of products designed to meet the needs of today's woodworkers and metalworkers. Ask your dealer about these fine products:

BROSEA® PRECISION STOP BLOCK

THE REBEL®

BOARD BUDDIES®

PLANER PAL®

SLICKPLANE®

ACCU-SHARP®

ROMAN CARBIDE®

JOINTER PAL®

DURASTICK®

SOUTH BEND™

STEELEX® FINE TOOLS

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Rotacator®

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